UNIVERSITI TEKNOLOGI MARA
Institute Of Continuing Education & Professional Studies

INTERNATIONAL JOURNAL ON E-LEARNING AND HIGHER EDUCATION

VOLUME 12
JAN 2020
ISSN 2229-8223

INTERNATIONAL JOURNAL ON E-LEARNING AND HIGHER EDUCATION

INTERNATIONAL JOURNAL ON E-LEARNING AND HIGHER EDUCATION

APAcS Star: Promoting Graduate Employability Traits

Puteh Mariam Ismail, Normahiran Yatim, Norhayati Alias
Faculty of Accountancy, Universiti Teknologi MARA,
40450 Shah Alam, Selangor, Malaysia
putehmariam@uitm.edu.my, normah900@uitm.edu.my, norha927@uitm.edu.my
**Corresponding Author*

Abstract: The issue of graduates' employability has become a growing concern globally. With many graduates, but limited positions in the workforce, it is imminent for graduates to possess employability traits. Employers also expect the students to learn a multitude of skills and abilities, on top of knowledge of accounting, while studying in the university. To reduce this gap, a student development framework, the APAcS Star was established. APAcS Star aims to bridge the gap by arming students with essential interpersonal skills. Based on three core Skill Areas, namely Critical Thinking, Communications and Leadership skills. APAcS Star is executed by further breaking those Skill Area into Traits. These traits connote an element of a Skill that, by mastering a number of those smaller Traits, will lead to a mastery of the major Skill. All the Traits from the three Skill Areas are smartly placed in events, starting with 'Knowledge Gaining', then progressing to 'Knowledge Applying' and 'Knowledge Assessing'. In 2016, 31 students graduated with an APAcS Star certificate. In 2017 and 2018, the final assessment was further enhanced into two categories, the idea pitching assessment and interview assessment, whereby 19 and 10 students respectively were awarded the APAcS Star certificate. The APAcS Star certificate increases the students' chances of gaining employability upon graduation. In conclusion, this framework was able to assist the higher education provider to craft and develop a multitude of skills and abilities of its graduates, thus reducing the employability gap.

Keywords: *Communication skills, Critical thinking, Graduate employability, Interpersonal Skills, Leadership skills*

INTRODUCTION

Lifewide education is an educational concept that recognizes that learning occurs in multiple contexts within a learner's life such as school, home, work and other platforms. Therefore, it is important for educational institutions to create this lifewide education atmosphere not only through formal, but also non formal and informal learning to encourage, support and recognize students' lifewide learning. Furthermore, technical knowledge on its own will not be sustainable, therefore, it is necessary to update knowledge and competency in line with lifewide education. This will ensure learners remain relevant despite huge changes in the global environment. For example, Association of Chartered Certified Accountants (ACCA) itself has frequent updates to syllabus and study guide which tend to focus on the changes in technical knowledge due to the exam oriented environment. Therefore, there is a lack of focus on soft skills through formal learning education and it is a skill that needs to be acquired not only through formal learning but also by other means.

Department of Professional Accounting Studies (DPAS) has three missions which are graduate on time, graduate employability traits and becoming chartered accountant in Malaysia. This is to support national agenda on producing and increasing bumiputera professional accountant by year 2030. The graduate on time and graduate employability traits are achieved during the learning phase while the latter will be achieved with three years working experience. Specifically, graduate on time is achieved when students pass their exam in stipulated time. During this period, students will gain all the technical knowledge needed to join the workforce. In order to continue supporting our students on-going journey, DPAS has developed APAcS Star framework to ensure they are equipped with the employability traits that will make them relevant to the industries. This issue of graduates' employability is one of the main concerns that were highlighted for quite some time. One pressing issue that needs focus is the existence of a gap between 'the level of competency expected by employers' and 'the level of competency presented by graduates'. This gap is known as the ‘Employability Gap’. APAcS Star program wishes to bridge the gap thus making graduates more attractive and relevant to the market.

APAcS Star is a yearlong program designed to equip graduates with critical

interpersonal skills to maximise graduates' employability chances aligned with industry's standard through industry integrated events and activities organised by the Association of Professional Accounting Students (APAcS). APAcS, a solitary student body that facilitates the welfare and development of Universiti Teknologi MARA (UiTM) Shah Alam's

professional accountancy graduates. APAcS has been actively helping to produce competent graduates fit for the corporate sectors in the country. Thus objective of this paper is to explain how APAcS Star programme addresses the employability traits issues that will make them relevant to join the workforce.

LITERATURE REVIEW

The International Federation of Accountants (IFAC) is the global organization for the accountancy profession. The organization supports the development, adoption and implementation of international standards for accounting education, ethics, and the public sector as well as audit and assurance. The body also addresses the importance of accounting graduates to possess employability skills to encourage high quality performance by professional accountants in their daily work. Employability can be defined as a measurement on marketability of graduates (Rahmat, Ahmad, Idris and Zainal,2011).

Altarawneh (2015) highlighted there is a significant gap between the skills employers need and consider important compared to accounting graduate skills possessed and demonstrated. Therefore, she suggested that with the ever changing and development of the role of accountants, the appropriate skills and capabilities also changes due to the changes in the external environment. This is consistent with Albercht & Sack (2000) studies which found that the gap is growing between the education and practise due to the change of environment. Due to this gap, students did not have adequate skills and attributes (Low et al, 2013). Therefore, there is a need to evaluate the appropriate skills to ensure the sustainability of the accounting graduates for the workforce.

In addition, students and employers have different perceptions on what skills students are required to have upon graduating from the university.

According to Aryanti and Adhariani (2019), their findings was that students found the top three skills as honesty, continuous learning and work ethics. On the other hand, employers top three skills were work ethics, teamwork and time management. Further, study by Kavanagh and Drennan (2008) found out that students need to be aware of the employer's expectation in terms of communication, analysis, professionalism and teamwork. This is further supported by the dissatisfaction of skills of graduates as evident in Cory and Pruske (2012). It can be concluded here that there is a significant gap between these two issues and it needs to be addressed. Though it is not the responsibility of the university, these skills expected by employers is suggested to be embedded at university level either through formal or informal learning.

Further, there are studies that discuss the importance of generic skills or better known as employability tratit. Generic skills can be described as those capabilities needed to join the workforce, other than technical skills. Abayadeera and Watty (2016) has suggested that the university should inculcate generic skills in the accounting curricula while Kermis and Kermis (2010) have called for accounting researchers and accounting firms to modify the accounting education in line with the current global working environment. At the University of Derby, the Derby Award Programme for Employability, Leadership and Management was established in 2007 to recognize student's achievement outside academic curriculum. Research by Alder found that it was beneficial to all students who had participated, even students who did not receive the award. This programme develops students interest in exploring other employability skills. It teaches students to reflect and plan for future professional and personal developments. After six years, the award was re-designed, to adapt to changes from previous experience and research.

However, there are studies that do not support this expectation gap. A study by Low et al. (2016) has found that there are employers that still focus on the technical knowledge as the main expectation for graduates to possess when they enter the workforce. This is because the study found that universities are preparing students for the workforce at the institution's best capacity.

RESEARCH METHODOLOGY

The National ICT Association of Malaysia (PIKOM) 2014 ICT Job Market Outlook in Malaysia reported that only 10% of new employees were work ready, and the rest needed further training before being able to undertake the requirements of their jobs (New Straits Times, 2014). In an article by The Star (2015), Datuk Shamsuddin Bardan, Director of Malaysian Employers Federation has stated that probably 30% to 40% of students are not really employable at the appropriate category for the first six months after graduation, and that students were weak as far as soft skills were concerned. Another article by The Star (2016) states that local graduates in particular find difficulty in getting jobs due to the poor command of English, the lack of soft skills and the inability to adapt to the realities of working life.
The APAcS Star framework was designed in line with the mission of APAcS, department and Faculty. APAcS mission is to produce holistically nurtured professionals, while the departments mission is to produce a much more versatile graduate in line with the country's vision to increase the number of qualified bumiputera accountants. The faculty's mission is to become a leading reference centre and catalyst to the accounting profession.

Based on the feedback from the industry it is evident that students have under-developed interpersonal skills. The gap between the level of competency expected by employers and presented by graduates is the gap of technical competencies, inability to communicate effectively, critical thinking and leadership skills. This is because the nature of professional accounting programs does not encapsulate the development of interpersonal skills in students.

The stakeholders considered in the development of the framework were the students, employers and the faculty. The objective of this framework is:

- To enhance the students employability through the industry-approved certificate initiative.
- To develop students in the three highly critical soft skills through events under the APAcS Star
- To provide employers with work-ready and holistically nurtured graduates.
- To bestow meaningful inputs to APAcS events.

The usefulness of the framework is to increase student's employability by

way of early exposure to the working environment and participation in soft skill-enhancing activities. Also, employers will be presented with desired graduates who are not only technically competent but also interpersonally capable. The APAcS Star complements the faculty's efforts in producing future professional accountants, whereby events organized are effective and meaningful, while the type of extracurricular activities offered are monitored. Additionally, the framework serves the needs of both students and industry whereby both students and employers will benefit and employability of fresh graduates is increased.

3.1 The APAcS Star Framework – the Design Phase

The framework of APAcS Star is intelligently broken down into 3 core Skill Areas that our graduates lack in, namely Critical Thinking, Communications and Leadership skills. APAcS Star was designed with the objective of addressing all of the skills through achieving the traits (a number of unique qualities and characteristics pertaining to that Skill Area) set out in the program. Among objectives set to be achieved are:

- Developing graduates' interpersonal skills. Through this programme, graduates will have the ability to think critically, communicate effectively and ability to lead and inspire.
- Exposure to the working world. Through collaboration with firms and companies, it will help graduates to experience the working life.
- All these objectives are expected to be achieved when graduates participate in the events set out throughout the period.

The traits are smartly placed on all the events held and segregated into progression levels which are 'Knowledge Gaining', 'Knowledge Applying' and 'Knowledge Assessing'. Graduates will have the aim of becoming APAcS Star graduates upon completion of all three progression levels. The summary of APAcS Star framework is depicted in Figure 1.

Figure 1: APAcS Star Framework

	Level 1	Level 2	Level 3
Communication Key traits: Interview skills Developing a good CV	CV workshop Microsoft Excel workshop Apprenticeship English Seminar Visits to Firms Conference Lecturers' Day	Public Speaking Contest Debate Contest Apprenticeship MCE Visit to Orphanage Visit to Old Folks Home Open Floor Visits to Firms	External Assessment
Critical Thinking Key trait: Identify, analyze and interpret problems Anticipate cause and effect situations	Apprenticeship Conference Industrial Talks AXP Audit Workshop	AXP Audit Workshop ABF Quiz Competitions Apprenticeship Debate Contest MCE Fit 14	External Assessment
Leadership Key traits: Delegate effectively	Leadership camp Conference Apprenticeship Journey to Jannah	Event Committees Futsal League Apprenticeship Fun Run and Ride	External Assessment
Make informed decisions			

3.2 Setting up the APAcS Star

Recruitment of members involved

A task force was set up and APAcS members aged 18 to 22 were recruited. During semester break, the members were brought together for brainstorming sessions.

APAcS Star was launched during the 14 Summit on 3rd of February 2016 at Annexe Hall, UiTM Shah Alam. The launch was officiated by the Dean of Faculty of Accountancy. The programs for the year under the framework was funded using the Tabung Amanah Pelajar (TAPA).

3.3 Communication of programme

During the early stage of the program, members engaged with the graduates through social media namely Twitter and Facebook. This is to inform them about the activities to be held and the traits that they will achieve when they participate. Graduates will also get emails regarding their APAcS Star progress. Apart from that, should they need their progress report, they can personally meet the members at the APAcS room to get it.

3.4 How APAcS Star works

3.4.1 Design of APAcS Star

The APAcS Star uses Microsoft Database. Firstly, student information are put into the 'Student Information Table'. This area inserted all students of the department. Then, the 'Skill Area Table Events' and 'Skill Area Table – Traits' are inserted into the Microsoft Database. When students attend events, it will be mapped to those traits. 'Query – Event' and 'Query – Percentage of Completion' allows to track which programs student have attended to date. A 'Progress Report' is available to track students progress at a certain date. The sample of the Progress Report is attached in Appendix 2. Students can also get a 'Report Card' for each Skill. This allows student to see your progress by skills category of Communication, Critical Thinking and Leadership. All the required traits for each skill set are presented in the Skill Area sheet (Table 2). For each trait, students are required where applicable to achieve all 3 levels of progression: Level 1(Knowledge Gaining), Level 2(Knowledge Applying) and Level 3(Knowledge Assessing). Progress table (Appendix 1) is used to list out activities and events that will be conducted and traits that can be gained are listed under each of these activities and events. The activities and events are arranged according to the levels of progression. Graduates are responsible to self-track their own progress; meanwhile APAcS will also track their progress in our designated APAcS Star database.

Table 1: Mapping of skills and knowledge

Skills	Events and Activities		
	Level 1 Knowledge gaining	Level 2 Knowledge Applying	Level 3 Knowledge Assessing
Communication skills	Events which enables students to gain knowledge of the three skills.	Applying the knowledge obtained in Level 1	The opportunity to network with the industry. Firms and companies supporting the APAcS Star to assess knowledge gained and application from previous levels.
Critical-thinking skills			
Leadership skills			

3.4.2 Progress tracking

When graduates participate in any activity listed in the Progress Table, the activity is marked [/] as done. The traits gained from the activity will be ticked [/] in the column provided in the Skills Area sheet. For each event attended, graduates are required to register themselves in order to be recorded in the APAcS Star database.

Figure 2: Illustration of how the progress tracking works.

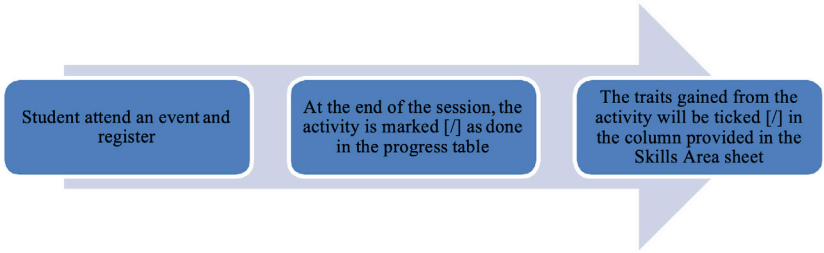


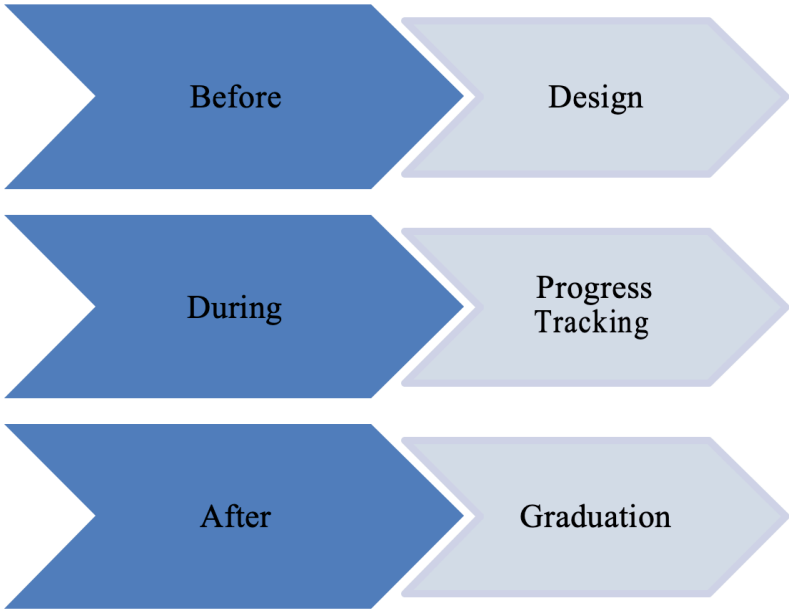
Table 2: Skill area and its relevant traits

COMMUNICATION	CRITICAL THINKING	LEADERSHIP
Interview skills	Identifying, analyzing and interpreting problems	Delegating effectively
Developing a good CV	Anticipating cause and effect situations	Team oriented
Expressing opinions objectively	Developing alternative solutions	Making informed decisions
Group discussion	Provide credibility in reasoning	Planning skills
Presenting ideas & information effectively	Deliberating and justifying ideas	Emotional stability
Information seeking – integrity in knowledge	Stakeholder management	Inspiring colleagues
Simplifying complex and creative ideas	Being inquisitive in knowledge gaining	Being consistent with values and decision
Ability to speak spontaneously	Developing informed decisions and conclusions	Developing accountability
Initiating casual conversation – networking	Developing intellectual empathy	Ability to gain buy-ins from stakeholders
Responding to criticism	Having conviction in ideas and arguments	Ethical
Etiquette in communicating	Humility of thought	Flexibility of decisions
Engaging with audience	Remaining objectives	Taking responsibility
		Giving credit
		Developing resilience

3.4.3 Completion of APAcS Star(Graduation)

Graduates will have the ultimate aim of becoming a STAR. Once a student has gone through the three level of events for a specific trait; for example, 'Identifying, Analyzing and Interpreting Problems', we assume that the student is now able to identify, analyze and interpret problems because the student has learned how to identify, analyze and interpret problems in a level 1 event, attempted to identify, analyze and interpret problems in a Level 2 event, and being assessed his level of identifying, analyzing and interpreting skills by an industry representative in a Level 3 event. However, a minimum of 70% of all traits are compulsory to be achieved in order to graduate. APAcS Star certificate and report card will be automatically given to those who have obtained all of the traits under each skill area. Should graduates need the report for Curricular Vitae purposes, it will be provided upon request.

Figure 3:APAcS Star framework process



RESULTS AND DISCUSSION - IMPLEMENTATION

The Microsoft Database was successfully used to capture the student's traits acquired and skills enhancement. An extract of the events, along with the traits acquired has been attached in Appendix 1.

4.1 Year 2016

In its year of establishment, the number of traits based on student activities were 87 traits. The number of students in the department stood at 623 students. At year end, students who had obtained 90% of the traits were awarded the APAcS Star Award. Therefore, students were required to achieve at least 78 traits to be awarded. The number of students being awarded APAcS Star Award in its premier year was 31students.

4.2 Year 2017 and 2018

After inception, the assessment was improved whereby students who had achieved above 80% of traits were required to go through a final assessment. This is to observe the skills acquired throughout the year. The final assessment consists of two sessions, idea pitching and interview. The idea pitching aims to assess students' ability in presenting their ideas in front of crowd and work in a team. The idea pitching saw students being divided into groups and judging was done based on the group presentation.

As for the interview, it is to assess students' ability in communicating with interviewers and answering questions for which will test their critical thinking skills. Evaluation was based on interviewer's judgement which was based on guidelines provided by the APAcS STAR committees. In 2017, the interviewers comprised of a lecturer, APAcS Star alumni and APAcS STAR committee. In 2018, the industry partner was also included as an interviewer.

The top scorers of the two assessments will determine the APAcS

Star Award recipients for the year. After the final assessment, 19 students were awarded the APAcS Star Award in 2017 and 10 students in 2018.

4.3 Discussion

Data are collected using questionnaire to APAcS Star Award recipients batch 2016 and 2017 to observe the employability of the recipients. There are 20 and 13 respondents for year 206 and 2017 respectively.The questionnaire was not sent to batch 2018 as these students were still studying at the university.

Table 3: Respondents current status

APAcS Star Recipients / Year	Still Studying		Graduated	Total
	Full Time	Part Time		
2017	4= 20%	8=40%	8=40%	20
2018	3=23%	7=54%	3=23%	13

Based from the above table, the respondents for each year is either successfully graduated or still studying as full time or part time students. Specifically, in the year 2016, 40% has graduated meanwhile 20% and 40% are still studying as full time or part time students respectively. For year 2017, 23% has graduated and 23% and 54% are still studying as full time or part time students respectively.

Further, students who have graduated or still studying as part time already have a job. They further can be classified as having a job upon completion, more than 3 months or less than six months or more than 6 months, less than 12 months and the findings are summarised in the following table:

Table 4: Respondents who were already working

Year	Upon completion	More than 3 months, less than 6 months	More than 6 months, less than 12 months
2017	77%	15%	8%
2018	86%	-	14%

Based from Table 4, the study found out that 77%(2016) and 86%(2017) got a job upon completing their full time studies. Further, only 15% have to wait in between of 3-6 months for year 2016 and none for year 2017. The balance had to wait more than six months but less than a year. This shows that those with APAcS certificate has assisted in students successfully gaining employment.

CONCLUSION

One of the recognised responsibilities of tertiary education is to offer lifewide education that would be beneficial for the students especially in terms of promoting graduates' employability. The APAcS Star framework is designed to assist the Department to develop students' employability skills during their study. The selected skills i.e. communication, critical thinking and leadership were chosen based on employers' expectations, recommendation by the professional accounting bodies and suggestion by literature on the required skills needed by the accounting graduates.

The core skills in the framework with the relevant traits for each skill were then used to design meaningful and purposeful activities for students throughout the year of study. The significant contribution from APAcS Star was increased in the percentage of students' chances of gaining employability upon graduation. The APAcS Star certificate of completion endorsed by key employers/education partner in accounting/finance industry offer evidence to potential employers on the acquired skills of our graduates. APAcS Star has brought significant changes to the landscape of the extra-curricular activities organised by APAcS to develop professional accounting students beyond the classrooms, in addition to their technical competencies any chartered accountant is expected to master. It is believed

that the continuation of this programme will become a prominent contributor to produce highly sought breed of graduates by the industry, to meet the level of competencies expected of a holistic, first- class graduates. From this programme, students will attain soft skill that will make them competitive and dynamic to enter workforce. For Faculty, this will help them to identify relevant and significant programme to be conducted

for our students and do better planning in allocating TAPA money for this activities. Through this best practice, UiTM will become a reference point by other institutions to address this employability trait.

Limitation of the study can be two-fold. One, this study only focus on the professional accounting students namely ACCA in the Faculty of Accountancy, UiTM. Second, the framework only focus on three employability skills demanded in the accounting/finance discipline, thus newly identified employability skills might be required for other disciplines. In the future, the application and usability of this framework should be extended to bigger scope of respondents such as from other undergraduates programs and disciplines in UiTM. In addition, the skills identified in APAcS Star framework must be extended to include new and emerging employability skills in the era of Industry 4.0 and beyond.

To conclude, this study is important as it assists the tertiary education in preparing the students with appropriate employability skills to meet the requirement of the employers in accounting/finance industry. This study also contributes in extending the literature by providing a framework for tertiary education to offer purposeful co-curricular activities in developing employability skills of their accounting graduates.

ACKNOWLEDGMENT

The authors would like to thank the Faculty of Accountancy for the recognition of the APAcS Star framework and for supporting the implementation of APAcS Star at the Department of Professional Accounting Studies. The authors would also like to thank the APAcS committees, particularly APAcS batch 2016 for their contribution in coming up and setting up this framework which allows for quality programs to be designed, developed and run by APAcS.

REFERENCES

Abayadeera, N., & Watty, K. (2016). *"Generic skills in accounting education in a developing country: exploratory evidence from Sri Lanka". Asian Review of Accounting. 24(2), 149-170*

Afolabi, S. O. (2014). *"Quality of Accounting Graduates: A Survey of Employers in Nigeria". IOSR Journal of Business and Management. Volume 16, Issue 11.Ver. II (Nov. 2014), PP 29-42*

Alshbili, I., & Elamer, A. A., (2019) *"The Vocational Skills Gap in Accounting Education Curricula: Empirical Evidence from the UK". International Journal of Management in Education.*

Altarawneh, G. A. (2016). *"An Empirical Evaluation of Accounting Graduates' Employability Skills from Jordanian Employers' Perspective". International Business Research; Vol. 9, No. 1; 2016*

Azmi, I. A. G., Hashim, R. C., & Yusoff, Y. M. (2018). *"The Employability Skills of Malaysian University Students". International Journal of Modern Trends in Social Sciences, 1(3), 01–14.*

Ebede, S. S. (2015). *"The impact of student organizations on the development of core competencies". Electronic Theses and Dissertations. 192.*

Ghani, E. K., Rappa, R., Gunardi, A. (2018). *"Employers' Perceived Accounting Graduates' Soft Skills". Academy of Accounting and Financial Studies Journal. Volume 22, Issue 5*

Hussein, A. (2017) *"Importance of Generic Skills in Accounting Education: Evidence from Egypt". International Journal of Accounting and FinancialReporting, Vol. 7, No. 2*

Jackson, N. & Willis, J. (n.d.). *"Lifewide Learning & Education in Universities and Colleges". Lifewide Learning & Education in Universities & Colleges, 1-10.*

Low, M., Botes, V., Dela Rue, D., & Allen, J. (2016). *"Accounting Employers' Expectations - The Ideal Accounting Graduates". e-Journal of Business Education & Scholarship of Teaching. Vol. 10, No. 1, 2016, pp: 36-57.*

Madhumali, P. K. & Ajward, R. (2018) *"Emloyability Skills Of Accounting Graduates: Perceptions Of Employers, Accounting Undergraduates And Educators In Sri Lanka". CA Journal of Applied Research, 2018, Vol. 2, Issue 1, pp. 65-86.*

Ooi, M. S. (2016). *"Making Jobless Grads Employable". The Star. 13 March*

Setyaningrum, D., Hermawan, A. A. & Nastiti, D. (2019).*"Assessing Competency Gaps Of Junior Auditor: Perception Of Employers, Junior Auditors, Lecturers And Students".*

Strauss-Keevy, M. (2014). *"Education Programmes' Responsibilities Regarding Pervasive Skills". Journal of Economic and Financial Sciences 7(2), pp. 415-432*

Tan, L. M. & Fawzi, L. (2017). *"Employability Skill Required of Accountants". SHS Web of Conferences 34, 06001 (2017)*

APPENDIX 1: PROGRESS TABLE (EXTRACT) – TRAITS ACQUIRED THROUGH COMMUNICATION SKILLS

Events Skill Area - Communication		
Level 1 (Knowledge gaining)	**Level 2 (Knowledge applying)**	**Level 3(Assessment)**
☐ **MIA Talk: Road to CA** ✓ Information seeking-integrity in knowledge ✓ Developing a good CV ✓ Initiating casual conversation-networking ✓ Etiquette in communicating ☐ **KPMG Visit** ☐ **EY Talk** ☐ **PWC Visit** ☐ **Deloitte Talk** ☐ **Lecturer's Day**(CI) ✓ Etiquette in communicating ✓ Initiating casual conversation – networking ✓ Ability to speak spontaneously ✓ Engaging with audience ☐ **BDO Visit** ☐ **KPMG Talk** ☐ **Apprenticeship**(CI) ✓ Group discussion ✓ Presenting ideas & information effectively ✓ Responding to criticism ✓ Engaging with audience ✓ Ability to speak spontaneously ☐ **Conference**(CI) ✓ Information seeking - integrity in knowledge ✓ Etiquette in communicating ✓ Simplifying complex and creative ideas ✓ Initiating casual conversation - networking ✓ Ability to speak spontaneously ☐ **ACCA Talk - Road to CA** ☐ **EY Visit** ☐ **PWC Talk** ☐ **Deloitte Visit** ☐ **BDO Talk** ☐ **Theatre Play**(CI) ✓ Presenting ideas & information effectively ✓ Responding to criticism ✓ Information seeking – integrity in knowledge ✓ Engaging with audience	☐ **14CARE: Community Service (Zoo)**(CI) ☐ **Excel Software Workshop**(CI) ✓ Information seeking – integrity in knowledge ✓ Developing a good CV ✓ Expressing opinions objectively ✓ Simplifying complex and creative ideas ✓ Presenting ideas & information effectively ☐ **Talk: EY Tax Challenge** ✓ Simplifying complex & creative ideas ✓ Expressing opinion objectively ✓ Presenting ideas & information effectively ✓ Engaging with audience ✓ Information seeking-integrity in knowledge ☐ **APTC: 14 Talk 2**(CI) ☐ **14CARE: Islamic Brotherhood Week + SolatHajat**(CI) ☐ **ACCA CV Workshop** ☐ **CV Workshop** ☐ **Open Floor**(CI) ☐ **Apprenticeship**(CI) ✓ Group discussion ✓ Presenting ideas & information effectively ✓ Ability to speak spontaneously ✓ Responding to criticism ✓ Developing a good CV ✓ Simplifying complex and creative ideas ✓ Interview skills ☐ **Bootcamp& Speed Interview**(CI) ☐ **Theatre Play**(CI) ☐ **Annual Dinner**(CI) ☐ **Deloitte Tax Challenge** ✓ Simplifying complex & creative ideas a ✓ Expressing opinion objectively ✓ Engaging with audience ✓ Information seeking – integrity in knowledge ☐ **AGM**(CI)	☐ **External assessment** ✓ Interview skills ✓ Ability to speak spontaneously ✓ Presenting ideas & information effectively ✓ Simplifying complex and creative ideas ✓ Responding to criticism ✓ Engaging with audience

APPENDIX 2: SAMPLE OF PROGRESS REPORT

NAMA AINA MARDHIAH BINTI BADLISHAH

NOMBOR PELAJAR 2015155503

	COMMITTEE	*STUDENT*
Operational Excellence Workshop	☐	☐
MIA Talk	☐	☑
Excel Software Workshop	☑	☐
KPMG Visit	☐	☐
Deloitte Talk : Alumni	☐	☑
Deloitte Visit	☐	☐
ACCA CV Workshop	☐	☐
14CARE : Zoo	☐	☐
APTC : 14Talks2	☐	☐
Islamic Brotherhood Week (IBW)	☑	☑
EY Talk : Islamic Banking	☐	☑
EY Visit	☐	☐
Lecturers' Day : Back to School	☐	
BDO Visit	☐	☑
EY Talk : Tax Challenge	☐	☐
PwC Visit	☐	☐
Nasyid WIRASA	☐	☐
Social Shared Values (SSV)		☐
Accounting Sports Carnival (ASC)	☐	☐
Open Floor	☐	☑

Completion progress (%)	**31**

Innovation In Teaching By Applying Neuro Linguistic Programming

Muhamad Fuad Abdul Karim, Hanim Abdul Razak, Mohammad Bastyian Mahmud

Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA, Campus Seremban, 70300 Seremban, Negeri Sembilan, Malaysia
fuad645@uitm.edu.my; bastyian474@uitm.edu.my
2Faculty of Electronic Engineering and Computer Engineering, Universiti Teknikal Malaysia Melaka, 76100 Durian Tunggal, Melaka, Malaysia
hanim@utem.edu.my
**Corresponding Author*

Abstract: Neuro Linguistic Programming (NLP) application in teaching and learning session during lectures is among the latest technique to be considered. NLP provides various alternatives in teaching and learning such as delivery and communication method based on basic human senses acceptance namely visual, auditory and kinesthetic. Communication that uses suitable language types and patterns is able to assist in accomplishing the information refinement in human's rational process in order to enhance the understanding rate and focus of learning. NLP application is capable in engaging enthusiasm and facilitates the learning and teaching process just as the information or knowledge has been successfully delivered, observed and understood by the student and consequently aiding an excellent academic achievement. This article discusses in brief the NLP usage to educators for an effective communication purpose and serves as the basis in introducing the advantage of using NLP during teaching and learning session. Furthermore, the article acts as a catalyst in order to attract interest and awareness among the educators in comprehending the NLP concept and its application in education field. Finally, the article aims to provide exposure and as a catalyst in producing a comprehensive NLP model that focuses to the teaching and learning purpose in each IPTA and IPTS especially in Universiti Teknologi MARA.

Keywords: *Neuro Linguistic Programming, Visual, Auditory, Visual, Kinesthetic, Teaching Method*

INTRODUCTION

Neuro Linguistic Programming (NLP) is a cognitive-behavioural model, operating on the nonconscious level of mind and techniques and language patterns could make certain changes in connections between neurological processes and therefore, restructure individuals' cognition and reform their behaviours (Savarledavar & Kuan, 2017). The title 'NLP' reflects the principle that a person is a whole mind–body system, with consistent, patterned connections between neurological processes ('neuro'), language ('linguistic') and learned behavioural strategies ('programming') (Kotera, 2018; Pintos-López, 2010; Tosey & Mathison, 2010). NLP emphasizes on the existing basic barriers and the functions of the mind system- our body which enables us to develop attitudes relying on what we think, feel, intention towards action, experience and image on the world which exists around us. Something for us to imagine and feel the magic of the question structure "How?" that enables us to listen and view the excitement that will help us to make a change in ourselves with the question structure "What?". Neuro- linguistic programming (NLP) has achieved considerable popularity as an approach to communication, learning and personal development (Tosey & Mathison, 2010).

Neuro in easy comprehension language is the nerves which transports the meaning of the human thinking process which operates through our senses such as seeing, touching, listening, tasting and smelling. Linguistic is something about the communication system and language be it conversation language or body language that we use as codes, instruction and comprehension on something that we acquire from our senses to give meaning and explanation on our experiences. It also describes about the influence on other people around us. Meanwhile, programming is an explanation on behaviour or action and our thinking pattern, about how we manage thoughts, feeling and communication in order to gain our desires and goals to produce something that is expected or not. Generally, NLP seeks the relationship among thinking (mental), speech (linguistics), and behavior patterns (behaviour) (HemmatiMaslakpak, Farhadi, & Fereidoni, 2016).

History of NLP started on early 1970s in California University, Santa Cruz by two pioneers who are John Grinder, a language lecturer and Richard Bandler, a psychology student with experience and knowledge both in

mathematics and computer science (Craft, 2001; Kotera, 2018; Mat, 2009; Tosey & Mathison, 2010). Both of them initiated interest on how certain people are able to communicate and eventually influence others effectively. They have done research on existing language usage and patterns with expertise by listening and speaking with them. Those who were involved in Grinder and Bandler's research such as Fritz Perls, an expertise in gestalt therapy, Virgina Satir, expertise in family therapy and amendment management and a hypnotherapist, Milton Ericson. Through the Grinder and Bandler's research, the NLP was produced to explain the behaviour determinants, approach and language pattern of the expertise. NLP also introduces the idea that becomes the basis of NLP. Therefore, NLP is also associated as a behaviour modelling or human excellence.

1.1 The NLP Main Presuppositions

NLP is a behaviour modelling based on certain main presuppositions as a guideline to achieve the desired objective (Bozoğlan, 2010; Mat, 2009; Pintos-López, 2010). NLP presuppositions are flexible and can be referred or not according to needs. The presuppositions are the beliefs underlying the usage and NLP development. The NLP presuppositions are as follows:

1.Nobody is broken.
2. Every action has positive intention.
3. No failure only feedback.
4. Flexibility is the key to success.
5. Having options is better than not having options.
6. A map is not a territory.
7. People make the best choices available to them.
8. We all have resources we need to succeed.
9. Do not ride on the "dead horse".
10. We can not not to communicate.

1.2 NLP Representation

NLP relates words, thoughts and behaviours to purposes and goals (Craft, 2001; Tosey & Mathison, 2010). It focuses on effective communication and proposes as a tool to facilitate the taking of

perspectives on any live set of issues (Craft, 2001). NLP representation dicusses about five ways human accepts information from the outside world towards the inner world which consists of our experience, our comprehension, our perception and our memory. What we see, we touch, we listen, we feel and we smell will be converted in a form that can be accepted and kept in our information storage store. The representative system is how we represent the outside world towards ourselves. The system consists of visual which is what we see, auditory which is what we listen, kinestetic which is what we touch, olfactory which is what we smell and gustatory which is what we taste. Student is communicating primarily through visual, auditory, or kinesthetic means (Helm, 2009).

1.3 The NLP Language of Senses and Predicate

The language of senses according to NLP is the language form often used by someone in conversation in which even the words selection roughly seems different but there is a similarity in its form. In order to view and understand the NLP language of senses, let us listen to the following examples about a story of three customers about a handphone which they have bought. The first customer said "I choose this smart phone because of the attractive shape and colour that can make others feel amazed by the owner". Meanwhile, the second customer gives the following statement "This smart phone is able to produce a clear sound, when listening to a song from this smart phone as if the sound and voice is coming from the original singer". Next, the third customer said "Eventhough there is no intention to buy a smart phone but after holding and touching different parts of the smart phone for several times, I will feel the satisfaction buying it".

We can see and feel that eventhough the three customers were describing about the same smart phone but the senses language usage pattern are different. As we can see, the first customer was describing using visual language pattern compared to the second customer who chooses auditory language and the third customer who uses kinestetic language. In general, we can identify the language pattern or predicate which is suitable to influence the customers in deciding to buy the smart phone. NLP is a huge resource for how to do things more

effectively (Pintos-López, 2010).

The NLP predicate is referring to suitable or acceptable words in someone's mind based on the senses language used. For example, for visual language, the words or predicates which are able to attract such as imagine, focus, look, observe, perception, scrutinize, survey, vision and others. Meanwhile, the suitable predicate to use for auditory senses language are listen, mention, report, silent, state, articulate, announce, discuss and others. The predicates for kinestetic senses language are support, touch, flow, active, charge, concrete, firm and others.

1.4 Application of NLP in Teaching

Learning and teaching process is the pulse and determinant of effectiveness of education system in education institutions whether at schools or institutes of higher learning such as universities and colleges. This matter is supported with the education system transformation in Malaysia that utilizes the Technical and Vocational Education and Training or TVET to fulfil the industry demand through The Tenth Malaysia Plan (2011-2015) and The Eleventh Malaysia Plan (2016-2020). Nevertheless, the success of the education transformation in Malaysia through TVET or any system also depends on the technique and method used in teaching especially in making the learning process more efficient and fulfilling the aimed objective. An alternative to teaching and learning is by utilizing the Neuro Linguistic Programming or NLP in teaching. NLP approach gives positive effect in education (Passmore & Rowson, 2019).

From the NLP meaning and concept, it is understood that the NLP usage in education is the right choice as it has been a while since the existence of NLP and is progressing in the western countries. The use and exposure of NLP in Malaysia has not yet widely spread but there has been effort for that purpose especially in IPTA. By using NLP, educators are expected to increase and strengthen the social interactions and communication with the students (HemmatiMaslakpak et al., 2016).

Educators who are lecturers and teachers should face with groups

of student with different absorption style and knowledge acceptance technique. This matter will make the teaching and learning process becoming more challenging, thus forcing the educators to work more efficiently and effectively. Through NLP, educators are exposed and assisted with the teaching communication that can be adapted with every students in the learning class by easy technique which are VAKOG. VAKOG is the abbreviation for visual, auditory, kinestetic, olfactory and gustatory. The olfactory and gustatory can be categorized in kinestetic element. Once the student has been determined to primarily belong to the visual, auditory, or kinesthetic communication or learning modality, the lecturer will divide the class into appropriate groups or using the predicate related to the VAKOG (Helm, 2009).

The senses language are very suitable in teaching technique. For example, in describing mathematics addition operation "Today I will explain about the mathematic operation where I will write number 5 plus 5 and try to imagine what is the answer.. (surely at this moment the students are imagining the answer to this mathematic question)… Students, try to imagine on your left there are 5 pigeons and there are 5 pigeons on your right as well..imagine you are touching the birds and count loudly until you hear how many are the pigeons now.. (at this moment the students will use all their senses in learning and solving the mathematic question". Through this example, the learning process is so attractive using the teaching method by applying NLP. The use of NLP can encourage a more diverse and creative approach to learning (Kudliskis, 2014).

CONCLUSION

The use of NLP in teaching helps the educators in translating the potential effectively in a teaching and learning environment. The use of NLP is able to increase the quality and generate the best outcome. NLP is a collection of techniques, patterns, and strategies for assisting effective communication, personal growth and change, and learning (Bozoğlan, 2010). NLP is able to produce attractive learning environment and creative teaching technique. The use of NLP in teaching and learning is part of alternative to seriously consider in Malaysian education system. NLP is able to help educators in supporting the nation education plan such as TVET by preparing an effective communication method. The formation of a comprehensive NLP

modul is hoped to be created in order to support the teaching and learning system in Malaysia.

REFERENCES

Bozoğlan, B. (2010). *Is NLP Applicable to ELT? Se Poate Aplica Programarea Neuro-Lingvistică În Predarea Limbii Engleze?, 62(1B), 185–195. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=59574198&lang=pt-br&site=eds-live&authtype=uid*

Craft, A. (2001). *Neuro-linguistic programming and learning theory. International Journal of Phytoremediation, 21(1), 125–136. https://doi.org/10.1080/09585170122455*

Helm, D. J. (2009). *Improving English Instruction through Neuro-Linguistic Programming. Education, 130(1), 110–113.*

HemmatiMaslakpak, M., Farhadi, M., & Fereidoni, J. (2016). *The effect of neuro-linguistic programming on occupational stress in critical care nurses. Iranian Journal of Nursing and Midwifery Research, 21(1), 38. https://doi.org/10.4103/1735-9066.174754*

Kotera, Y. (2018). *A qualitative investigation into the experience of neuro-linguistic programming certification training among Japanese career consultants. British Journal of Guidance and Counselling, 46(1), 39–50. https://doi.org/10.1080/03069885.2017.1320781*

Kudliskis, V. (2014). *Teaching assistants, neuro-linguistic programming (NLP) and special educational needs: 'reframing' the learning experience for students with mild SEN. Pastoral Care in Education, 32(4), 251– 263. https://doi.org/10.1080/02643944.2014.960533*

Mat, M. T. (2009). *NLP: Rahsia sains dan seni kejayaan diri. Kuala Lumpur: Percetakan CL Wong Sdn. Bhd.*

Passmore, J., & Rowson, T. (2019). *Neuro-linguistic programming: A review of NLP research and the application of NLP in coaching. International Coaching Psychology Review, 14(1), 57–69. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=134289081&site=ehost-live*

Pintos-López, I. (2010). *CHOICES AND RESPONSIBILITY IN COUNSELING: Looking into Neuro- Linguistic Programming (NLP) and Reality Therapy (RT) for a Common Thread. International Journal of Choice Theory and Reality Therapy @BULLET Fall, XXX(2), 2–23*

.

Savarledavar, M., & Kuan, G. (2017). *The Use of Neuro-Linguistic Programming as an Educational- Therapeutic Programme: Two Case Studies. Education in Medicine Journal, 9(1), 49–58. https://doi.org/10.21315/eimj2017.9.1.5*

Tosey, P., & Mathison, J. (2010). *Neuro-linguistic programming as an innovation in education and teaching. Innovations in Education and Teaching International, 47(3), 317–326. https://doi.org/10.1080/14703297.2010.498183*

The Acceptance Of Mobile Learning For The Subject Of Geography Among Pre University Students (Form 6)

Dympna James Jemson, Sabariah Sharif, Soon Singh A/L Bikar Singh

Faculty of Psychology and Education, Universiti Malaysia Sabah, Jalan UMS, 88400, Kota Kinabalu, Sabah, Malaysia
zoedynn28@gmail.com
sabariah@ums.edu.my
soonbs@ums.edu.my
**Corresponding Author*

Abstract: 21st century technology and skills in education are two of the key issues in research over the years. Mobile learning has shown great potential of 21st century technology in education today. Technological developments such as mobile learning have changed the way students communicate, learn, think, and share information among them. This study was conducted to look at the acceptance of mobile learning among form 6 students in geography subjects. The quantitative method was used in this study involving 137 form 6 student from Pre University center located in the district of Kota Kinabalu, Sabah. All students taking geography subjects were taken as samples. Questionnaire was used as an instrument in this study, referred and modified from the Technology Acceptance Model (TAM) to determine the level of acceptance of mobile learning among form 6 students in Geography subject. The study involved a form 6 student from Pre University center located in Kota Kinabalu, Sabah. The results from statistical analysis show that the acceptance level of students on mobile learning is in the high level.

Keywords: *Mobile Learning, Acceptance, Technology Acceptance Model*

INTRODUCTION

Implementation of technologies such as mobile learning in teaching and learning especially in fieldwork activity is one of the way to enhanc the quality of 21st century education in Malaysia and in developing students'

soft skills. The re-branding of form 6 education has become one of the Ministry of Education's (MOE) initiatives in the Malaysian Education Development Plan (PPPM) 2013-2025 with a view to strengthening the form 6 education through enhancing the image, system and quality of education equivalent to other pre university education such as Matriculation (Malaysia Ministry of Education, 2013). Among the aspects of soft skills implemented in this system is include communication skills, teamwork, leadership, critical thinking, problem solving, information management, ethics, and more (Majlis Peperiksaan Malaysia, 2012).

Coursework such as fieldwork activity is one of the assessments which will be evaluated in the Malaysian High School Certificate (STPM). Fieldwork activity is seen as a context in which the benefits of mobile learning technology can be used. Particularly in collecting data, taking pictures, videos and audio recordings and saving interview notes (Herrington, Herrington, Mantei, Olney, & Ferry, 2009).

The concept of mobile learning is refers to application of E-learning anyway and everyway (Jarvis & Dickie, 2010). Technology implementation not only in the classroom but also outside the classroom where students adapt to the advancement of new technologies such as smartphones and tablets in their learning. This mobile technology is typically used to transfer information or provide information to users at any location (Masrom & Ismail, 2010), and to store multimedia data using a variety of mobile applications (K. E. Welsh, France, Whalley, & Park, 2012). However, teachers are aware of the use of technology in teaching and learning, but are unaware of its importance in facilitating student fieldwork activity (Dunn, 2012). Nowadays most students have mobile devices (K. Welsh & France, 2012) but they are unaware of its importance in helping to improve the quality of their learning (Woodcock, Middleton, & Nortcliffe, 2012).

1.1 Research Problem

In Malaysia, Mobile learning is only widely practiced at the higher learning institution. It is widely used in support of the teaching and learning system through the bring your own device policy to give students the flexibility to search and access information using their smartphone or tablet. On the contrary, the situation at form 6 education.

Due to existing educational policies that prohibit the use of mobile devices among students causing mobile learning has yet to be fully explored, especially at the Malaysian schools level (Sa'don, Dahlan, Ibrahim, & Fadzleen, 2013). Research on the use of mobile learning technology in teaching and learning activity have also been conducted in Malaysia but not many have touched on the use of technology in fieldwork activity (Amin & Norazah, 2013).

The success of implementing mobile learning will depend on human factors. Among the human factors involved are students' acceptance to use technology in their learning. It is found that, even if a student uses a mobile device regularly, it does not mean that he or she will be ready to use it in their learning activity (Supyan, Mohd Radzi, Zaini, and Pramela, 2012). The aims of this study are to look the acceptance of mobile learning among form 6 students in geography subjects fieldwork activity.

1.2 Benefits of Mobile Learning

Mobile devices are an easy-to-reach, affordable and accessible tool for students in the 21st century education (Grimus and Ebner, 2016), thus they have the opportunity to carry out their learning activities using mobile devices without the constraints of space and time (Ch'ng & Samsudin, 2013)

.

Learning systems assisted with the use of mobile devices have the benefit of pedagogical development such as student-centered learning and the ability to make any space or place a learning place (Franklin, 2011). As students become more aware of the use of mobile devices in their learning, it will lead to more effective use of mobile learning (Song, Murphy, & Farley, 2013). It further enables teachers to build a new community of learning ecosystems. This is because most students today use smartphones, iPads, tablets and iPod devices to keep in touch and discuss among them (Berge & Muilenburg, 2013).

The use of mobile technology in mobile learning is expected to create learning spaces that connect students globally and can challenge and transform our educational institutions into 21st century education that

creates a more complex learning environment. In addition, support from the school and the education system is also needed. This is because it is a key factor in the successful use of mobile learning implementation in our education system (Al Tabib, Daud, Mahmud, & Ayub, 2016).

Geography is one of the subjects that is still using the tradisional way of memorizing facts without technology skills. In addition to geography skills topics, building bar graphs and lines are using Microsoft Excel, other topics in this course are taught manually. The lack of technology integration in geography subjects is one of the reasons why students are less interested in it (Lateh & Muniandy, 2011).

1.3 Mobile Learning in Fieldwork Activity

Mobile learning can improve data collection efficiency, analyze field data faster and reduce data processing time in schools, which is often the cause of problems in preparing fieldwork reports especially for form 6 students. The use of mobile learning in fieldwork activity is not widely used in form 6 teaching and learning practices. Teachers need to show students how to integrate mobile learning in fieldwork (Constantinidis, Chang, Lewi, Saniga, & Sadar, 2013). Implementing mobile learning in their fieldwork activity will enable students to learn new skills in applying 21st century technology and soft skills within themselves by integrating their own learning experiences (Fuller & France, 2014). It provides students with opportunities to do technical research skills such as data collection, data analysis, and others (Dunn, 2012). In addition, the implementation of mobile learning in fieldwork activity can reduce the pressure on the cost of conducting fieldwork and increase student digital literacy. It can also reduce the boundaries between formal and informal learning systems by using mobile devices (Welsh dan France, 2012).

The application of mobile technology using smartphones as a tool can increase student engagement in fieldwork activities and in turn will help teachers focus more especially on implementation processes to be completed within a set time frame (Jarvis, Tate, Dickie, & Brown, 2016). Cheon, Lee, Crooks, & Song (2012) and Martin & Ertzberger,

(2013) found that using mobile devices through mobile learning helps in the development of self-learning, collaborative learning and informal learning beyond the classroom.

1.4 Technology Acceptance Model

Technology Acceptance Model (TAM) developed by Davis, Bagozzi dan Warshaw (1989) (Davis, Bagozzi, & Warshaw, 1989) F. D. Davis, R. Bagozzi, and P. Warshaw. It is a combination of several theories of behavior and is used specifically in technology implementation. Through this model, the acceptance of a technology is a key factor in determining its success in implementing technology in an activity. Implementation of technologies that are considered doesn't add any value in any activity is considered unsuccessful (Davis et al., 1989). TAM is used to determine perceived usefulness and level of perceived ease of use affecting their acceptance of mobile learning N. Park, R. Roman, S. Lee, and J. E. Chung. Davis et al., (1989) defined perceived usefulness as "the extent to which a person believes that using a particular system will improve or improve his or her work". Whereas perceived ease of use is "how much one believes that using a particular system dosent need any effort". These then lead to individual behaviour intention and actual behaviour.

Acceptance of new technologies is a prerequisite for seeing the success of technology-based learning; Therefore, studies on students' acceptance of technology may contribute to the development of technology implementation in mobile learning (Putra, 2016) D. M. Putra.

METHOD

2.1 Population and Sampling

This research involved form 6 school located in the Kota Kinabalu district of Sabah. The sampling method used is the purposive sampling. It is a method of selecting a sample based on specific research needs and characteristics (Frey, Carl & Gary, 2000). All 137 students taking geography subjects were taken as study samples. Students from each

school will conduct fieldwork activity according to their respective schools and the fieldwork will be according to the schedule provided by their schools base on the manual provided by the Malaysian Examination Council. The sample of the study selected has the same characteristics as form 6 students between 18 and 19 years old.

2.2 Instruments

The instrument is built based on the technology acceptance model instrument developed by Davis et al. (1989). The purpose of this instrument is to measure the acceptance of mobile learning among form 6 students in geography subjects fieldwork activity through the following attributes: usefulness, ease of use, social influence, actual use, and behavioral intention to use.

RESULTS

The findings of the students' level of acceptance of mobile learning in geography fieldwork activity are shown in the table below.

3.1 Participant Profile

The respondents in this study were 137 students consisting of students taking form 6 geography subjects in Kota Kinabalu district. From the data obtained, 31.4% (n = 43) were male, and 68.6% (n =94) were female students. This indicates that female students are the majority of respondents in this study. Data distribution on respondents' gender is shown in Table 1.

Table 1. Number and Percentage of Respondents by Gender

Gender	Simple (n=137)	Percentage (%)
Male	43	31.4
Female	94	68.6

3.2 Mobile Learning Acceptance Levels

Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 22 software which included descriptive statistics methods such as mean and standard deviation. For the purpose of analyzing the level of student acceptance of mobile learning in form

6 geography subjects, the level of measurement such as Table 2 has been used as a result of modified from Pallant (2011) view.

Table 2. Interpretation of Min Score

Mean score	Interpretation (Level)
0.0 to 1.66	Low
1.67 to 3.33	Moderate
3.34 to 5.00	High

Table 3. Mobile Learning Acceptance in fieldwork activities Levels

Construct	Items	N	Mean	S. D	level
Perceived usefulness	PU1	137	5.16	1.426	High
	PU2	137	5.28	1.230	High
	PU3	137	5.51	1.132	High
	PU4	137	5.42	1.180	High
Perceived ease of use	PE1	137	5.35	1.128	High
	PE2	137	5.37	1.176	High
	PE3	137	5.05	1.178	High
	PE4	137	5.28	1.149	High
	PE5	137	5.40	1.141	High
Social influence	SI1	137	5.47	1.295	High
	SI2	137	5.53	1.170	High
	SI3	137	5.52	1.243	High
	SI4	137	5.51	1.255	High
Actual use	AU1	137	5.47	1.164	High
	AU2	137	5.39	1.107	High
	AU3	137	5.48	1.099	High
	AU4	137	5.42	1.041	High
	AU5	137	5.32	1.091	High
Behavioral intention to use	BI1	137	5.29	1.183	High
	BI2	137	5.28	1.294	High
	BI3	137	5.26	1.196	High
	BI4	137	5.35	1.216	High

The analysis shows that students believe that mobile learning is very useful where it is at a high level with a PU value of 5.34. PE is 5.29. The findings also show that students will be more motivated in mobile learning if they have the support of the school, teachers and peers where it is at the level of SI with a mean score of 5.50.

Students also find that mobile learning can help them to complete their fieldwork repots and thus improve their achievement by being at a high level with an AU value of 5.41. Furthermore, mobile learning

also affects student behavior which is at a high level with a BI value mean score of 5.29.

The findings of this study show that the use of mobile learning in fieldwork activity is more effective than conventional methods. The findings of this study are consistent with the findings of Karch (2014) who report that the use of mobile learning is very effective both in the classroom and outside the classroom. In order to ensure the meaningful and effective use of smartphones/tablets must be changed focus to the educational pedagogy need towards 21st century learning.

Incorporating technology into the teaching of 21st century skills will encourage students to actively participate in their learning (Larson & Miller, 2011) and further encourage the development of mobile learning in fieldwork, which will foster self-directed learning that will enable students to optimize their understanding and learning through mobile devices (Sa'don et al., 2013).

DISCUSSION AND CONCLUSION

Mobile technology has great potential for facilitating students' self-study in geographic subjects especially in fieldwork activity (Chen & Wang, 2015). To achieve this, the emphasis on the needs of teachers and students should be given priority in teaching and learning. In terms of teaching, the development of mobile learning, the school should provide basic facilities to enable teachers to apply mobile learning both at school and outside of school. Based on preliminary research, it is found that the level of student acceptance of mobile learning is high level.

However, students still need sufficient guidance in learning the use of mobile learning in fieldwork activity. The design of a mobile learning module or guide is essential to guide students and help students to better understand the application of mobile learning in fieldwork activity not only in geography subject but also in other subjects.

ACKNOWLEDGMENT

Special thanks to the form 6 schools involved in this study as well as to my friends and lecturers who have been very helpful in completing this research.

REFERENCES

Al Tabib, M., Daud, S. M., Mahmud, R., & Ayub, A. F. (2016). *Mobile Learning Utilization : A Proposed Model to Investigate an Important Predictors of Mobile Learning Utilization and Measure The Role of Behavioral Intention As A Mediator Variable. Journal of Applied Sciences Research, 12(11), 31–43.*

Amin, E. M., & Norazah, M. N. (2013). *Mobile Learning : Malaysian Initiatives & Research Findings. (M. A. Embi & N. M. Nordin, Eds.) (1st ed.). Kuala Lumpur: Centre For Academic Advancement, Universiti Kebangsaan Malaysia.*

Berge, Z. L., & Muilenburg, L. Y. (2013). *Handbook of Mobile Learning. Routledge. https://doi.org/10.4324/9780203118764.ch3*

Ch'ng, L. K., & Samsudin, Z. (2013). *Integration of Mobile Devices into Ubiquitous Learning by the 21st Century Teenagers. Education, 3(6), 362–374. https://doi.org/10.5923/j.edu.20130306.12*

Chen, C. M., & Wang, Y. H. (2015). *Geospatial education in high schools: Curriculums, methodologies, and practices. In Geospatial Technologies and Geography Education in a Changing World: Geospatial Practices and Lessons Learned. https://doi.org/10.1007/978-4- 431-55519-3_6*

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). *An investigation of mobile learning readiness in higher education based on the theory of planned behavior. Computers and Education. https://doi.org/10.1016/j.compedu.2012.04.015*

Constantinidis, D., Chang, S., Lewi, H., Saniga, A., & Sadar, J. (2013). *Designing Fieldwork with Mobile Devices for Students of the Urban Environment. Proceedings.*

Davis, F. D., Bagozzi, R., & Warshaw, P. (1989). *User acceptance of computer technology: a comparison of two theoretical models. Management Science, 35, 181–192. https://doi.org/10.1287/mnsc.35.8.982*

Dunn, S. (2012). *Using GIS and handheld technology to enhance fieldwork. Royal Geographical Society.*

Franklin, T. (2011). Mobile Learning : *At the Tipping Point. The Turkish Online Journal of Educational Technology, 10(4), 261–275.*

Fuller, I., & France, D. (2014). *Fieldwork Going Digital. Developments in Earth Surface Processes. https://doi.org/10.1016/B978-0-444-63402-3.00008-X*

Grimus, M., & Ebner, M. (2016). *Mobile Phones and Learning Perceptions of Austrian Students, aged 11 to 14 Years. World Conference on Educational Media and Technology, (July), 106–115.*

Herrington, J., Herrington, A., Mantei, J., Olney, I., & Ferry, B. (2009). *Using mobile technologies to develop new ways of teaching and learning. New Technologies New Pedagogies Mobile Learning in Higher Education.*

Jarvis, C., & Dickie, J. (2010). *Podcasts in support of experiential field learning. Journal of Geography in Higher Education. https://doi.org/10.1080/03098260903093653*

Jarvis, C., Tate, N., Dickie, J., & Brown, G. (2016). *Mobile Learning in a Human Geography Field Course. Journal of Geography, 115(2), 61–71. https://doi.org/10.1080/00221341.2015.1026373*

Lateh, H., & Muniandy, V. (2011). *GIS dalam pendidikan geografi di Malaysia : Cabaran dan potensi. Malaysian Journal of Society and Space, 1(1), 42–52.*

Martin, F., & Ertzberger, J. (2013). *Here and now mobile learning: An experimental study on the use of mobile technology. Computers and*

Education, 68, 76–85. https://doi.org/10.1016/j.compedu.2013.04.021

Pallant, J. (2011). *A step by step guide to data analysis using SPSS. Alen & Unwin.*

Putra, D. M. (2016). *The Influence On Factors In Attitudes Toward Acceptance Of The Information System Using Technology Acceptance Model (TAM) Case Study SPAN System In Indonesia. INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH, 5(04). Retrieved from www.ijstr.org*

Sa'don, N. F., Dahlan, H. M., Ibrahim, A., & Fadzleen, N. (2013). Usage of mobile learning in Malaysian secondary education: Stakeholders' view. Journal of Information Systems Research and Innovation, 6, 42–50.

Song, H. S. Y., Murphy, A., & Farley, H. (2013). *Mobile devices for learning in Malaysia : Then and now. In 30th Ascilite Conference 2013 Proceedings (pp. 830–834).*

Supyan, H., Mohd Radzi, M., Zaini, A., & Pramela, K. (2012). *Mobile learning readiness among Malaysian students at higher learning institutes. Asian Social Science, 8(12), 276–283. https://doi.org/10.5539/ass.v8n12p276*

Welsh, K. E., France, D., Whalley, W. B., & Park, J. R. (2012). *Geotagging Photographs in Student Fieldwork. Journal of Geography in Higher Education. https://doi.org/10.1080/03098265.2011.647307*

Welsh, K., & France, D. (2012). *Smartphones and fieldwork. Geography, 97(Spring), 47–51. Woodcock, B., Middleton, A., & Nortcliffe, A. (2012). Considering the Smartphone Learner: developing innovation to investigate the opportunities for students and their interest. StudentEngagement and Experience Journal. https://doi.org/10.7190/seej v1i1.38*

Innovative Pedagogy in CDIO Implementation for Engineering Education

Asmidar Alias, Nur Asmaliza Mohd Noor, Noraida Mohd Saim

Faculty of Civil Engineering, Universiti Teknologi MARA Pahang
asmidar@uitm.edu.my, nurasmaliza@uitm.edu.my, aidams2000@uitm.edu.my

Abstract: *Engineering accreditation council (EAC) and Engineering Technology Accreditation Council (ETAC) requires CDIO initiative to be implemented in engineering programs. In term of delivery, CDIO standards emphasis on integrated learning experiences and active learning. While the reformed curriculum has been developed at macro level, changes impact directly on academics' skills development and delivery to suit 21st century learning environment which are ubiquitous, flexible and technology based. Faculty of Civil Engineering UiTM Pahang (FCE) shared the classroom implementation applying innovative pedagogies to provide students with learning experiences stresses engineering fundamentals that are set in the context of Conceiving – Designing – Implementing – Operating (CDIO). The paper describes the diversity of classroom practices shared by FCE, progress and impact.*

Keywords: *CDIO, Engineering Education, Innovative Pedagogies.*

INTRODUCTION

Curriculum design in engineering education has experienced procedure of transformation to conform requirement in engineering accreditation. Accreditation bodies through Engineering Accreditation Council (EAC) and Engineering Technology Accreditation Council (ETAC) emphasis all undergraduate engineering programs in Malaysia to demonstrate attainment of specific learning outcomes. EAC and ETAC used general description for example 'ability' and 'demonstrate competency' without detailing the level to be achieved (Kamsah and Kassim, 2013). These requirements is detailed and complimented with CDIO framework.

CDIO initiative is an engineering education framework has expanded to

include engineering program worldwide with the project vision to provide students with an education stressing on engineering fundamentals set in the context of Conceiving, Designing, Implementing and Operating (hence the acronym CDIO) real-world system and products (Kamsah and Kassim, 2013, Berggren et al., 2003). Berggren et al., (2003) explained the CDIO initiative strategy divided into four themes; 1) curriculum reform to ensure that students have opportunities to develop the knowledge, skills and attitudes to conceive and design complex systems and products 2) improved level of teaching and learning necessary for deep understanding of technical information and skills 3) experiential learning environments provided by laboratories and workshops 4) Effective assessment methods to determine quality and improve the learning process. CDIO emphasis on integrated learning experiences and active learning stated in Standard 7 and Standard 8 respectively.

In the context of civil engineering programme conducted by Faculty of Engineering UiTM Pahang (FCUiTMP), CDIO initiative is made to align with Outcome Based Education (OBE) requirement for Malaysian Qualification Agency (MQA), EAC and ETAC. Motivation to adapt CDIO in curriculum and teaching are to ensure knowledge and skill progression, accreditation and professional body requirements, comprehensive integrated curriculum with mutually disciplinary subjects and attributes; and ensure relevant curriculum delivery in the 21st century learning environment that are ubiquitous, flexible and technology based. CDIO framework definitely support Education 4.0, that focuses on educational development and skill has made future learning advanced skill and development (Shahroom and Hussin, 2018).

Evolution in this education framework reveals one of the challenges face by the faculty members which is the need to exercise innovative pedagogies; focusing towards student centered learning and the use of technology. In this regard, the unit of CDIO in FCEUiTMP and main campus have played important role introducing different teaching methods to enhance active learning and integrated learning experience through workshop, training and sharing best practices in faculty seminar. This paper present innovative pedagogies and active learning practice by FCEUiTMP.

ACTIVE LEARNING AND INTEGRATED LEARNING EXPERIENCES IN CDIO APPROACH

One of the main motivation of the whole CDIO approach is to make engineering more interesting and active learning is one answer to support students' motivation to engage students more on their learning (Kontio, 2015). The CDIO initiative emphasis active learning in one of the twelve standards focusing on the teaching pedagogy for engineering students (CDIO, 2014). Innovative pedagogies can provide students with concrete experiences on engineering practice. The student becoming the center of learning comparing to traditional method focusing on the lecturer. Student-centered learning approach and classroom setting has been stressed in

education reports (Oinam, 2017; Wright, 2011; Mohd. Yusoff, Abdul Karim, Othman, Mohin and Abdull Rahman, 2013; Abdelmalak and Trespalacious, 2013). Student centered learning enable individual and collaborating students participating in the knowledge delivery to provide good learning environment and beliefs. Encourage students to search for relevant knowledge rather than the educators monopolizing the transmission of information to the learners. Used the integration of technology in education as suggested (Schmid et al., 2014 and Yildirim & Sensoy, 2018) as one of teacher-student interactive method.

CDIO (CDIO, 2012) describe active learning methods engage students directly in thinking and problem solving activities. There is less emphasis on passive transmission of information, and more on engaging students in manipulating, applying, analyzing, and evaluating ideas. Active learning in lecture-based courses can include such methods as partner and small-group discussions, demonstrations, debates, concept questions, and feedback from students about what they are learning. Active learning is considered experiential when students take on roles that simulate professional engineering practice, for example, design-implement projects, simulations, and case studies. CDIO emphasis learning through standard 7 and 8;

Standard 7 Integrated learning experiences that lead to the acquisition of disciplinary knowledge, as well as personal and interpersonal skills, and product, process and system building skills.
Standard 8 Teaching and learning based on active experiential learning methods

CDIO indicates successful implementation of active learning methods by higher education institution (HEI) is shown by evidences in term of observation and self-report, a majority of instructors using active learning methods, high levels of student achievement of all learning outcomes and high levels of student satisfaction with learning methods (CDIO, 2012).

CDIO AND INNOVATIVE PEDAGOGY IN FCEUITM IMPLEMENTATION

The adaptation of CDIO initiative in FCEUiTMP through comprehensive, moving and continual cycle begin with understanding the program philosophy, adapting new methods of teaching & learning and continual assessment & evaluation process. (Figure 1).

Figure 1 FCEUiTMP CDIO Implementation

The implementation of CDIO in FCEUiTMP focus on comprehensive training aimed to expose faculty members with essential techniques, instructional methods, class control and the used of current technology. Faculty members were trained to be competent in implementing CDIO in workshops, talks and seminars. Selected faculty members were chose to

experience further preparing to progress toward specialist master trainers to cascade the knowledge of CDIO.Faculty members that are equipped with fitting aptitudes which can convey the imaginative instructional method with certain and control.

The implementation inclusive training in program philosophy and curriculum development, new methods of teaching and learning; and assessment and evaluation.

3.1 Program Philosophy and Curriculum Development

CDIO framework consists of 12 standards referred to responsibilities of an engineer. The idea is to systematically strengthen the skill set which include disciplinary knowledge, personal skills and interpersonal skills set. The faculty has selected ten courses to implement CDIO and designed in sequence (Figure 2) to

demonstrate integrated learning. The horizontal and vertical articulation and integration of knowledge and skills is shown in Figure 3. Nevertheless, the faculty members are encourage to adapt active learning and integrated learning experience in classroom setting not limited to selected courses only.

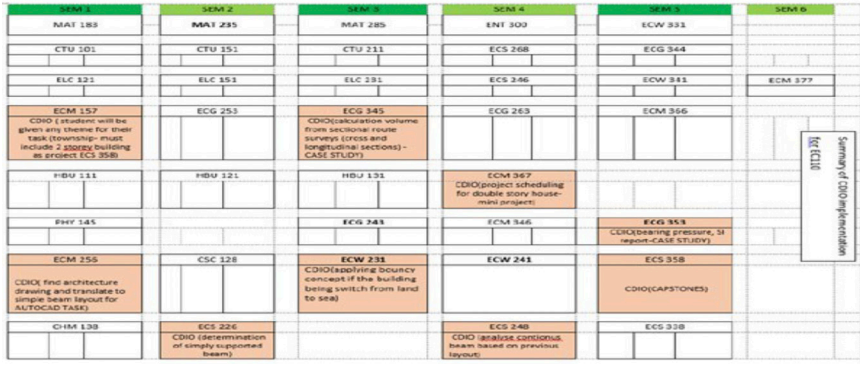


Figure 2 Sequence learning experience

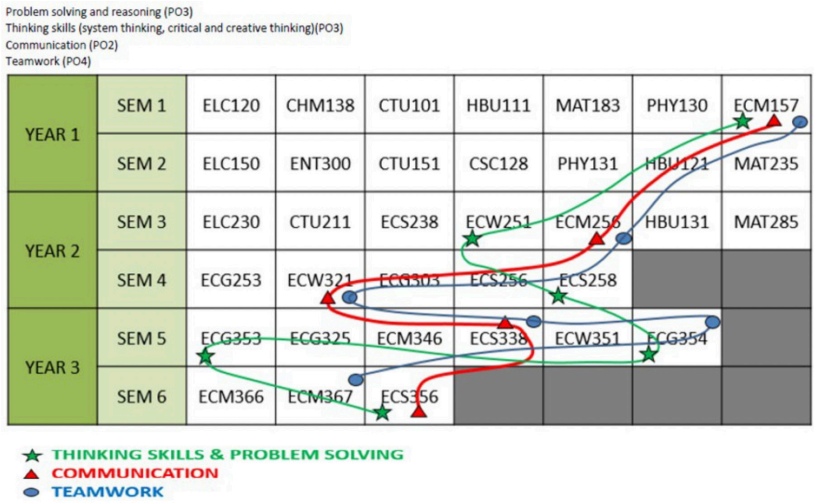


Figure 3 Horizontal and Vertical Articulation and Integration of Knowledge and Skills

3.2 New Methods of Teaching and Learning

CDIO emphasis to adopt the principle of product, process and system lifecycle development & deployment: conceiving, designing, implementing and operating (as the context for engineering education). The wisdom is to directly embed the skill set required by current business environment. Faculty members are equipped with variety teaching learning assessment mode. It provide project based on design-build experiences & teaching and learning (TL) approaches through active learning. With integrated learning experiences, faculty can be increasingly viable in helping students apply disciplinary knowledge to engineering practice and better set them up to meet the demands of the engineering profession. Training programmes have been conducted to all faculty members since 2012 with total number of 18 workshops.

3.3 Assessment and Evaluation

Students is required to demonstrate what they have learned the required skills and syllabus content in practice. The CDIO directly and clearly help to assess student learning in personal, interpersonal and product, process and system building skills, as well as in disciplinary

knowledge. CDIO provides an approach of: Introduce – Teach – Utilize - Assess to strengthen the implementation and assessment skills set. It provides variety teaching-learning-assess mode to support the EAC requirement. The evaluation of CDIO practices demonstrated in internal audit and faculty seminar.

OBSERVATION AND DISCUSSION

The observation for CDIO implementation in FCEUiTM Pahang is collected from engineering education symposium (EESCDIO) and internal audit report. The EESCDIO is the platform to share best practices from faculty member and to demonstrate the implementation of standard 7 and 8 from CDIO framework. Total number of faculty members is 39 and number of faculty member implementing is 33, almost 85% practicing innovative pedagogy in teaching. Audit report shows all nine courses selected for CDIO has 100% compliance. The detail of using innovative pedagogy as shown in Table 1.

Table 1. Innovative Pedagogy in CDIO Implementation

Type of Learning	Method of Teaching and Learning	No. Faculty member
Active Learning (Individual and Grouping)	Presentation, Mock meeting, Mind Map, Quiz, Paired, one minute paper, gallery walk, brainstorming and clustering.	9
Collaborative and Cooperative Learning	Flipped Classroom, Jigsaw classroom,	7
Use of technology	Video related topic, F-C tutorial apps, iLearn platform (forum, assessment),	6
Game based learning	Kahoot, Quizizz,	5
Experiential learning	Project-based learning, Problem-based learning, model construction, innovation competition, lab and field testing, site visit Example: Highway capacity assessment and modeling, Modeling of retaining wall, modeling of waterways channel profile, Project management competition, Build and Test competition	6

Faculty of Civil Engineering has shared the best practice implementing active learning in the class experience and presented in ESSDIO 2019. Total number of presentation by faculty members' is 10 with 90% participations (collaborative effort). FCEUiTMP shared active learning experiences presented in figure 4 – 9. Total of 10 technical papers produced on active learning on CDIO implementation.

Figure 4: Problem-Based Learning Solving for Pavement Design (Case Study and Modelling)

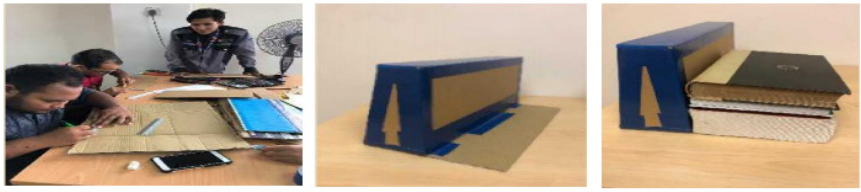


Figure 5: Identifying Lateral Earth Pressure using physical model and self-administered testing

Figure 6: Field works testing

Figure 7: Conceptual of design using collaborative learning

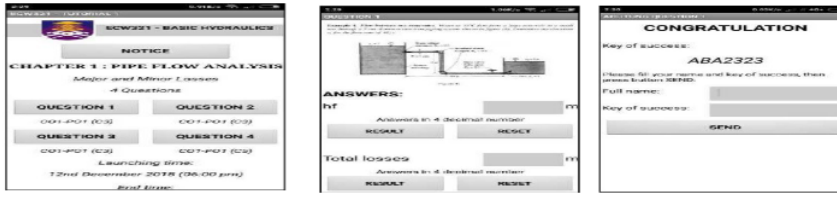


Figure 8: Developing Tutorial Apps

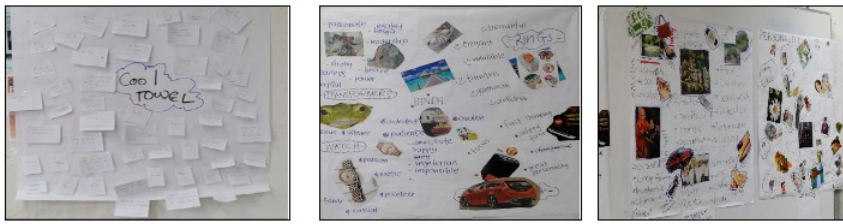


Figure 9: Brainstorming and Clustering

One example shared by a faculty member on student satisfaction has been conducted using self- administered questionnaire. The questionnaire is closed ended questions using Likert scale (1-5) and an open ended question. Questionnaire were posted via Google form. The descriptive analysis is used using analysis ToolPak, Microsoft excel 2013. This research population of 310 students, semester 4 for ECS 246 (reading and theoretical subject). The sample of 160 students answering the questionnaire. Table 2 shows students perception on different methods of teaching. The indicator are SD (Strongly Disagree), D (Disagree), A (Agree) and SA (Strongly Agree).

Based on the results, students preferred learning conducted using active learning method compare to traditional lecturing mode. The highest mean are using video and game based learning. Lowest mean reflected for conventional lecture. Comment from open ended question also show students preferred active learning. One of the comment stated,

"Add some games (filled with knowledge about this subject) to give sparks of excitements to students and build their attention to everything that is being explained."

Table 2. Students' perception on different teaching method in classroom setting

No	Item	Percentage				
		SD	D	N	A	SA
1	Traditional method	11	33	36	14	6
2	Video to present the content of subject	0	0	18	59	23
3	Mind mapping – sketching to present ideas (individual)	3	14	29	38	16
4	Mind mapping – sketching to present ideas (group)	5	6	25	47	17
5	Quiz (offline)(individual)	7	7	33	43	10
6	Quiz (offline)(group)	3	7	28	41	21
7	Group presentation	7	3	32	41	17
8	Game based learning	0	0	14	37	49

CONCLUSION

CDIO implementation in FCEUiTMP enable innovative pedagogies to be implemented in curriculum and classroom implementation. Workshops are essential to train faculty members with variety of teaching approach thus elevate confident designing instructional methods and implementation. The best practices are shared during faculty's symposium and compliance check during audit. Balance ecosystem is compulsory to accelerate change and cooperation from faculty members is the key success for CDIO implementation.

REFERENCES

Abdelmalak, M., and Trespalacios, J. (2013). *Using a Learner-Centered Approach to Develop an Educational Technology Course.*

Berggren, K.F., Brodeur, D., Crawley, E.F., Ingemarsson, I., Litant, WTG, Malmqvist, J., and Ostlund, S. 2003. *CDIO: An International Initiative for Reforming Engineering Education. World Transactions on Engineering and Technology Education. Vol. 2, No. 1, 2003.*

CDIO. 2012. *CDIO Introductory Workshop Programme. Handbook. Materials to Supplement Slides. Malaysia.*

CDIO. 2014. *CDIO Standards 2.0. Retreived from http://www.cdio.org/implementing-cdio/standards/12-cdio- standard#standard8*

ETAC. 2019. *Engineering Technician Education Programme Accreditation Standard.*

Kamsah, M.Z. and Kassim, M.A. 2013. *The Importance of CDIO in the Fulfiling the Outcome-Based Education and EAC2012 Requirements. Interntional Conferrence on Engineering Education. Madinah Kingdom of Saudi Arabia. 25-27 December 2017.*

Kontio, J. 2015. *Active Learning – an Introductory Workshop. Proceedings of the 11th International CDIO Conference, Chengdu University of Information Technology, Chengdu, Sichuan, P.R. China. June 8-11, 2015.*

Mohd. Yusoff, N.Abdul Karim, A.M., Othman, R., Mohin, M., and Abdull Rahman, S.A. (2013). *Student- Centered Learning (SCL) in the Malaysian Higher Education Institution. AJTLHE Vol. 5, No. 2, July 2013, 14-33.*

Oinam, S. 2017. *Student-Centered Approach to Teaching and Learning in Higher Education for Quality Enhancement. IOSR Journal of Humanities and Social Science (IOSR-JHSS). Volume 22, Issue 6, Ver. 12 (June 2017). Pp 27-30.*

Schmid, R.F., Bernard, R.M., Borokhovski, E., Tamim, R.M., Abrami, P.C., Surkes, M.A., Wade, C.A. and Woods, J. (2014). *The effects of technology use in postsecondary education: a meta-analysis of classroom applications. Comput Educ., 72: 271–29*

Shahroom, A.A., and Hussin, N. 2018. *Industrial Revolution 4.0 and Education. International Journal of Academic Research in Business and Social Sciences, 8(9), 314-319.*

Wright. G.B. (2011). *Student-Centered Learning in Higher Education. International Journal of Teaching and Learning in Higher Education. Volume 23, Number 3, 92-97.*

Yildirim, H. I., & Sensoy, O. (2018). *The effect of science teaching enriched with technological applications on the science achievements of 7th grade students. Journal of Education and Training Studies, 6(9), 53- 68.*

Immersion, exposure and learner driven learning through 360-degree videos and VR experiences: Education 4.0 for English Teaching

Airil Haimi Mohd Adnan

Department of English & Linguistics APB, Universiti Teknologi MARA Perak Branch, Seri Iskandar Campus, 32610 Bandar Seri Iskandar, Perak State, Malaysia airil384@uitm.edu.my

Abstract: Obstacles, both imagined and real, continue to hinder the wider adoption of Education 4.0 learning technologies although these technologies are now easily available in the mainstream consumer market. At the same time, the boom in Industry 4.0 manufacturing has brought down the prices of these technological tools making them more affordable to all. A case in point is 360-degree spherical video cameras and software that can record, render and playback immersive 'real life' contents. 360-degree spherical video contents can then be rendered and post-processed into VR (virtual reality) experiences that are not just immersive but also allow for limitless exposure time to learners. Both technologies allow for 'learner driven learning' to happen in the truest sense, for instance for English language learners. This research paper examines data collected from 160 undergraduates who were immersed and exposed to 360-degree videos and VR experiences for a degree level course on English for Business and Professional Interactions at a public university campus in northern Malaysia. Even if this unfunded teaching innovation project is only 10 months 'young', the benefits of 360-degree videos and VR experiences in English language content delivery are evident to support learner drive learning: Contents are freely available online and learners can learn anytime, anywhere; total immersion can be achieved using cheap VR goggles powered by learners' smartphones; and, most beneficially, weaker learners who desperately need more time to understand and practice difficult degree level English skills now have the freedom to revise and upskill themselves at their own pace.

Keywords: *360-degree videos, Education 4.0, immersive learning, language exposure, virtual reality*

INTRODUCTION

Leading futurist, Gerd Leonhard (2019), predicts that human civilisation will see more changes in the next 20 years than we have ever experienced in the last 300 years. If this prediction comes true, then those who are able to 'see' these changes before they happen and those who are responding in an active manner will have a lead over others who are merely reacting to those changes after they have happened. Indeed, there are changes happening now that are revolutionising the jobs that we do and the ways that we learn; driven by technical developments never witnessed before, the nature of modern living as we know it will never be the same (see Davies, Fidler & Gorbis, 2011).

Within the realm of education, rapid changes are also happening. We have reached a critical juncture in teaching and learning because of Industry 4.0 disruptions (see Schwab, 2016; Schwab & Davis, 2018). Within this context, educators and learners need to change the way they think and perceive the world from "Why should we be doing this?" to "Why aren't we doing this?" (see World Economic Forum, 2016, 2018). One of the momentous changes happening right now within education is the convergence of immersive learning with learner exposure and learner driven learning. These three concepts might be different, but they relate to the same key purpose which is to help our learners to learn in a more engaging, productive and useful manner compared to just learning by rote and memorising disjointed facts and figures that are easily forgotten (Ehlers & Kellermann, 2019). Within the wider umbrella of immersive learning initiatives, learners at all stages of formal education in developed and developing nations are being exposed to interactive environments both physically and virtually; these are environments that can reproduce real world scenarios to teach certain skills. Combining simulations, game elements and virtual environments, 'true' immersive learning is finally made possible with technological developments from Industry 4.0 and supported by the philosophies of the Education 4.0 global movement (see Adnan, 2018, 2019).

REVIEW OF RESEARCH LITERATURE

In this section, research literature that relates to the empirical inquiry reported in this paper is reviewed starting with an in-depth discussion of the

notion of immersive learning followed by 360- degree videos and virtual reality (VR) experiences within the realm of education. The discussion is framed within the broader picture of the Industry 4.0 era and Education 4.0 universal movement.

2.1 Immersion, exposure and learner driven learning

Within the realms of education and training, new and affordable Industry 4.0 technologies are creating new ways to make immersive learning more experiential and learner driven whilst opening up opportunities to 'transport' learners into controlled environments with engaging tasks or situations for them to engage in. The direct result of this, is the ability of learners to learn at such a great depth than previously thought possible. As learning technologies bridge the gap between what is conceivable and what is practical, deeply immersive learning is now feasible and it will continue to deliver memorable and meaningful learning 'experiences' in future (Leonhard, 2019).

At tertiary level, to create an immersive learning experience traditionally might be limited to the course instructor telling a story or role playing a situation with learners (AdvancED, 2015). For university or college instructors with more resources and time, instructional video clips or online learning games offer some sort of immersion by drawing on experiences that emulate real life situations and enable practice to happen in real time. Indeed, research suggests that experiences gained during learning simulations can be stored in our memory as if they were real (see 3DLabs, 2019; Adnan et al., 2019). At the same time, there are limitations with these approaches. Traditional flat 2D video clips and online learning games are limited in their learning value plus they are far from immersive though they might be somewhat interactive. Worse, some learners can finish watching them or playing them quickly, lessening exposure time that is desperately needs by weaker learners to learn and relearn skills that might be difficult for them. At the other end of the spectrum, 'true' immersion that combines the best of e-Learning with engaging simulations is highly complex to produce and will therefore come at a higher price tag. Unsurprisingly, even for universities and colleges with a lot of cash, the price factor is always a burden in learning content development and deployment,

not just in developing countries but in developed ones as well.

2.2 Learning through 360-degree videos and virtual reality (VR) experiences

Thankfully, the rapid technical and technological developments of Industry 4.0 manufacturing have led to the creation of a new generation of immersive learning technologies that can be fully utilised by university or college instructors (see Doucet, et al., 2018). These include interactive 360-degree video technology, virtual reality or VR experiences, augmented reality or AR overlays, and mixed reality (MR) or extended reality (XR) simulations. Together, these technological tools hold exciting possibilities for bringing immersive, learner driven learning into the lecture room.

360-degree videos enable learners to observe a scene in whichever direction they wish. Thus, they are able to virtually explore a made up world or view an actual recording of the real world made by 360-degree video cameras. On smartphones, as learners move and turn their devices left and right or up and down, the images that they see move in perfect synchrony; on laptops computers and desktops, they can easily navigate spherical 360-degree videos by clicking and dragging navigation buttons. YouTube, for example, is witnessing a great number of 360-degree videos being uploaded not just for entertainment but also for teaching and learning purposes. On newer platforms like VeeR (which markets itself as 'YouTube for VR') and using more advanced commercially available software, 360- degree videos can be further rendered and post-processed into standalone 'virtual reality experiences'. VR experiences represent the cutting edge of technologically enhanced teaching and learning, and they can be powered by standalone VR headsets capable of immersing and exposing learners to new learning experiences (see Ahmad et al., 2019; Aniwaa, 2019)

With reference to VR experiences, whether they are fully computer-generated environments or built upon 360-degree videos from real-life situations, these experiences lead to immersive learning and

longer exposure time for learners without real life difficulties, even though the initial setup will need investments to defray high costs. VR experiences enable learners to learn, first-hand, from their mistakes. And, it allows for longer exposure to learning materials and more practice time, especially for weaker learners who might have difficulties to acquire specific skills and knowledge from classroom time alone. Immersing learners in real life situations using interactive VR experiences is especially useful to train and develop soft skills and second (or third) language skills (Mohd et al., 2019). Other skills like customer services or people management and formal meeting or negotiations are great examples where learners can be placed in positions of potential tension but where they are able to 'see' how certain decisions will lead to certain outcomes, without risks.

By learning about workplace related scenarios in an interactive VR environment, for instance, the learner will be able to develop appropriate workplace related skills to resolve conflicts, dilemmas, and problems in an appropriate manner. In other words, this really is learning by doing, in the truest sense of the term. This is due to the fact that we have reached an exhilarating point in the rise of immersive learning technologies, as several factors converge to transform the future of learning landscape (Rüfenacht, 2017). VR technology has now evolved from a personal computer tethered technology to one that can be easily accessed using smartphones and tablets. At this moment in time, an immersive VR experience is attainable merely by using the same gadgets that we carry in our pockets and bags. Furthermore, thanks to VR platforms on the Internet like VeeR, there is no need for special apps to be installed on smartphones. Add to this the wide affordability of cheap and relatively easy to use smartphone powered VR headsets, the investment needed to access immersive VR experiences is becoming lower all the time, for learners at all levels of formal education.

2.3 360-degree videos and virtual reality (VR) experiences for Education 4.0

The global Education 4.0 movement should be viewed as a set of trends and challenges that tertiary educators need to be aware of and

to respond to (see Times Higher Education, 2019). The first trend is the transformation of the teaching and learning process. Tertiary educators must reconsider why and how they teach once Artificial Intelligence (AI) and other deep learning technologies become more prevalent in colleges and universities. The second trend is more personalised learner driven learning. Tertiary educators must be able to cater to the learning styles of students and take into account their individual behaviours, differences and performances. The next trend is personalised assessment. As AI systems run classroom tests, experiential learning through digital technologies will become the norm, so tertiary educators need to do without high stakes pen and paper tests. The final trend is the growth in intelligent digital environments. As digital environments become more common in physical classrooms, tertiary students need better experiences to be able to interact effectively and learn from and within those environments (see Mustafa Kamal et al., 2019).

Today, the technological tools, software and apps related to Education 4.0 and Industry 4.0 that are needed to produce VR experiences are becoming more affordable and more accessible with newer and cheaper 360-degree cameras arriving on the commercial market. Consequently, the stage is set for immersive learning that is fully driven by learners to enter the learning ecosystem in formal education (Madigan, 2018). Still, there are issues and problems to contend with before these disruptive Education

4.0 technologies could spread from technically-savvy content developers to mainstream adoption. The question is not whether something is new, but rather will it be better than what we have had in the past? (see Taplin, 2017). This is where hard evidence needs to be collected and analysed to truly examine whether immersive VR experiences are better for teaching and learning, in the tertiary education sector especially, compared to teaching and learning methods that we have had in the past like 'chalk and talk' and rote learning that is supported by regimented drills and repetition exercises. To answer these and other pertinent questions related to immersion, exposure and learner driven learning through 360-degree videos and VR experiences, an empirical inquiry was carried out as explained in

the next section.

RESEARCH METHODS AND RESEARCH PARTICIPANTS

This study examines quantitative and qualitative data collected from 160 undergraduates (n =
160) who were immersed in, and exposed to, 360-degree videos and VR experiences for a degree level course on English for Business and Professional Interactions at a public university campus in northern

Malaysia. 102 of the undergraduates were female and another 58 were male; 39 of them were doing first degrees in arts and design whereas the other 121 were first degree students in either architecture, planning or surveying named courses. Overall, the data collection and analysis process took about ten months to complete, spanning two semesters, from the start of year 2019. This study was fully self- funded as part of a teaching and learning technology innovation project called 'English Language Simulations Augmented with 360° Videos' (or ELSA 360°-Videos). In particular, the study sets out to find answers to three research questions (RQ):

RQ1: What are the advantages and disadvantages of 360-degree videos and VR experiences in delivering educational materials, specifically for tertiary level English?
RQ2: Compared to methods used by 'traditional' instructors how useful are 360-degree videos and VR experiences, for the current generation of undergraduates?
RQ3: In the future, will 360-degree videos and VR experiences become more common as part of immersive and interactive learning initiatives? Why so?

3.1 Research instruments and research cycles

In Cycle One of the study, quantitative data collection was done using an online survey questionnaire with 25 items that asked the respondents to compare between 360-degree video materials and VR experiences with traditional learning in terms of usefulness, usability and overall impression. They were also asked to respond to items related to the future of 360-degree videos and VR experiences, and the strength and

weaknesses of these technologies with regard to English language teaching and learning. Additionally, they were asked to respond to some survey items that are related to the contribution of 360-degree videos and VR experiences to their abilities and skills in English for Business, Professional and Workplace Interactions.

This was followed by Cycle Two, that involved the collection of qualitative data employing focus group discussion sessions. These sessions were tied in with post-evaluation sessions during actual class time to address the actual performances of the students involved in this course. Five open questions were posed to a group of four to five learners regarding the same subject matters covered in Cycle One. The students (participants) were free to share their ideas, feelings and opinions. They were asked to link between this teaching and learning technology innovation project with the actual marks that they scored for two test components totalling 50 per cent or half of the course. It should also be mentioned that the English for Business and Professional Interactions course is graded based on classroom administered tests and coursework without a final examination component.

3.2 Data management and data analysis

The data collected from Cycle One were analysed based on mean, mode and median frequencies. The analysis of the data was done to show the prevalence of certain criteria based on the experiences of the respondents, for instance: The usefulness and usability of 360-degree videos and VR experiences; the perceived future of 360-degree videos and VR experiences; the strengths and weaknesses of these technologies with reference to English education; and the influence of 360-degree videos and VR experiences on the abilities and skills of the respondents with regard to specific Business, Professional and Workplace English skills.

The data collected from Cycle Two were more substantial and 'thick' (Geertz, 1973) given the fact that the participants were asked to share ideas, feelings and opinions in an open manner amongst peers. Other than selective transcriptions of the focus group data, the participants

were also requested to write a summary of the points and ideas that they talked about during the session. These were then checked and reshared with the participants to allow for 'member checking' (Chapelle & Duff, 2003) to happen. No clear-cut protocols were prepared for the discussion sessions and only open questions were posed, to allow the participants to make comments and share their experiences freely. Sessions were conducted fully in English. After transcribing and coding, the data were thematically analysed in two stages: horizontal (group data) and vertical (personal data). At the end of the data collection and analysis stage, the three research questions were answered satisfactorily.

RESULTS OF THE STUDY AND DISCUSSION

The results of this study are divided into two subsections: Cycle One and Cycle Two. The data for Cycle One are numerical/quantitative whereas the data for Cycle Two textual/qualitative. The data are presented below and discussed, in an attempt to address the three research/guiding questions.

4.1 Cycle 1 data: Numerical/quantitative

160 undergraduates (i.e., respondents) completed a 25 item survey questionnaire online where they were asked to compare 360-degree video materials and VR experiences with more traditional learning methods. They were also asked to think about the future of 360-degree video materials and VR experiences in tertiary education, and to gauge how these learning technologies have influenced their specific English language abilities and skills. Using a Likert scale, the respondents can choose between 'Strongly disagree', 'Disagree' or 'Fairly disagree' at the negative end of the spectrum whilst at the positive end they could choose either 'Fairly agree', 'Agree' or 'Strongly agree'. The first item asks the respondents whether the use of 360-degree videos and VR experiences felt more useful to them compared to more traditional teaching methods like chalk and talk. Perhaps unsurprisingly and given the fact that the respondents have all been exposed to 360-degree videos and VR experiences, 146 or 91.25% of them chose positive answers, as seen in Table 1 below.

Table 1. "Using 360-degree videos and VR are more useful than traditional learning methods"

Negative spectrum			*Positive spectrum*		
Strongly disagree	Disagree	Fairly disagree	Fairly Agree	Agree	Strongly agree
2 (1.25%)	2 (1.25%)	10 (6.25%)	14 (8.75%)	80 (50.0%)	52 (32.5%)

The greatest strengths of 360-degree videos and VR experiences lie in their abilities not just to make the learning immersive and interactive, but also to allow learners or end-users to gain access to limitless exposure time to specific learning materials. Indeed, 360-degree videos and VR allow learners to learn as much as they want, when they want to; the more time a learner spends being immersed in these technologies, the more prepared she or he will be for formal assessments and other tests related to the course. This fact is not lost on the respondents as shown in Table 2.

Table 2. "Using 360-degree videos and VR I can get more time to practice before facing tests"

Negative spectrum			*Positive spectrum*		
Strongly disagree	Disagree	Fairly disagree	Fairly Agree	Agree	Strongly agree
0 (0%)	2 (1.25%)	2 (1.25%)	20 (12.5%)	70 (43.75%)	66 (41.25%)

The table above is a clear indicator of the usefulness and utility of 360-degree videos and also VR experiences in terms of helping learners to practice intensively and extensively before they face course assessments or tests. However, bear in mind that these statements relate mainly to the teaching and learning of English. And so, it was quite surprising to find that the respondents were equally open to the idea of using 360-degree videos and VR experiences for the teaching and learning of other subjects, as shown in Table 3 below.

Table 3. "360-degree videos and VR experiences should be introduced for other university subjects"

Negative spectrum			*Positive spectrum*		
Strongly disagree	Disagree	Fairly disagree	Fairly Agree	Agree	Strongly agree
2 (1.25%)	4 (2.5%)	10 (6.25%)	28 (17.5%)	78 (48.75%)	38 (23.75%)

Very interestingly, the respondents also showed very positive orientation towards the use of 360-degree videos and VR experiences at university level not just for individual subjects or courses. They believe that their university should apply these technologies for future teaching and learning initiatives, so that other students too can benefit from immersive and interactive learning technologies. The responses recorded are presented in Table 4, next.

Table 4. "In future, this university should use more technology like 360-degree videos and VR"

Negative spectrum			*Positive spectrum*		
Strongly disagree	Disagree	Fairly disagree	Fairly Agree	Agree	Strongly agree
2 (1.25%)	2 (1.25%)	6 (3.75%)	30 (18.75%)	52 (32.5%)	68 (42.5%)

In another survey item related to Table 4, the respondents were asked whether their lecturers should be more open to the idea of using 360-degree videos and VR experiences in the teaching and learning process as shown in Table 5. This is because one of the biggest obstacles in the adoption of 21st century learning technologies is the disinterestedness of tertiary lecturers and course instructors. Perhaps they feel that traditional methods are still needed or maybe they think that teaching and learning with technology is an unneeded hassle. These should inform future research that examines the roles of tertiary lecturers and instructors as content developers for future learning initiatives.

Table 5. "The lecturers at this university need to be open to 360-degree videos and VR experiences"

Negative spectrum			*Positive spectrum*		
Strongly disagree	Disagree	Fairly disagree	Fairly Agree	Agree	Strongly agree
0 (0%)	6 (3.75%)	10 (6.25%)	28 (17.5%)	82 (51.25%)	34 (21.25%)

Items 15 and 16 in the survey questionnaire are related to the technical side of the deployment of 360-degree videos and VR experiences in the teaching and learning dyad. Even though learners can interact with 360-degree videos using YouTube, in the form of spherical or 360-degree video objects, to truly become immersed in the learning process they need to invest in VR goggles. There are many types of VR goggles that can be procured but the cheapest and most accessible, especially for university students, seem to be VR goggles that are powered by smartphones. Users need only mount their smartphones within the goggles to access interactive and immersive VR experiences. Higher immersiveness leads to better engagement with the subject matter at hand. Higher immersiveness and the ability to interact with VR experiences also lead to more exposure time which can help with the acquisition and practice of specific skills. Table 6 shows that many of the respondents were interested in buying VR goggles as part of their learning process at university.

Table 6. "I think VR goggles are a good investment if used for teaching and learning at university"

Negative spectrum			*Positive spectrum*		
Strongly disagree	Disagree	Fairly disagree	Fairly Agree	Agree	Strongly agree
6 (3.75%)	8 (5.0%)	16 (10.0%)	18 (11.25%)	86 (53.75%)	26 (16.25%)

It must also be stated that although the respondents generally harbour positive views on the use of 360-degree videos and VR experiences in the teaching and learning process, there are several technical obstacles that hinder the wider adoption of these teaching and learning technologies. To be sure, it must be frustrating for university students to have to contend with mobile data limits and bad Internet connectivity when they want to use 360-degree videos and VR experiences to learn new things and to practice new skills. That being said, these annoying issues seem to plague and to hinder wider use of Internet-related teaching and learning technologies at this present moment, in Malaysia and in most developing countries. Table 7 portrays the frustrations of the respondents.

Table 7. "360-degree videos and VR experiences are cool, but the problem is that our Internet sucks"

Positive spectrum			*Negative spectrum*		
Strongly disagree	Disagree	Fairly disagree	Fairly Agree	Agree	Strongly agree
2 (1.25%)	4 (2.5%)	6 (3.75%)	23 (14.4%)	62 (38.7%)	63 (39.4%)

The final table, Table 8, is a clear indication that we are moving in the right direction in terms of deploying 360-degree videos and VR experiences in the teaching and learning process at university level. Only 34 respondents or 21.25% of the population have somewhat negative feelings in terms of the contribution of these technologies to their skills and knowledge (in English for Professional Interactions) compared to 126 respondents or 78.75% who accept these technologies in positive light. In other words, for every five undergraduates at university, four will benefit from the use of 360-degree videos and VR experiences in teaching and learning.

Table 8. "Contribution to learning (VR 360-degree videos and VR experiences) to my level of skill/ knowledge at the END of this course on English for Professional Interactions"

Negative spectrum			*Positive spectrum*		
Strongly disagree	Disagree	Fairly disagree	Fairly Agree	Agree	Strongly agree
0 (0%)	12 (7.5%)	22 (13.75%)	44 (27.5%)	54 (33.75%)	28 (17.5%)

4.2 Cycle 2 data: Textual/qualitative

Cycle Two of the data collection and analysis process relied on focus group discussions to gain insights into the ideas, feelings and opinions of the participants with regards to the use of 360-degree videos and VR. These focus group discussions were linked with the post-evaluation of test performances for the students involved in this course. Five open questions were posed to a group of four to five participants regarding the same subject matters covered in Cycle One. The names below are pseudonyms chosen by the participants to protect their identities but the comments shared are actual comments and utterances with only minor editing to improve language accuracy.

4.2.1 Benefits and advantages of VR experiences and 360-degree videos at university

According to 'Siti Nadiah', "Technology that uses 3-dimensional graphics make us, the users, feel like we are really interacting in the real world. We can also visualise abstract learning materials, so these materials become easier to understand, more enjoyable and fun to learn." Siti's ideas and feelings seem to be shared by nearly all of the participants, due to the fact that they have all been exposed to VR experiences and 360-degree videos. For 'Nurul Ainaa,' the biggest benefit of using VR experiences and 360-degree videos in the teaching and learning process is the exposure to new technologies that are relevant in the era of Industry 4.0. She further explained:

Technology like this is really quite expensive to buy or develop. So, when we use this in class, students can have the opportunity to learn using the state-of-the-art VR technology and 360- degree videos. My friends and me also noticed that the learning process can be a lot more interesting and fun by using VR and 360-degree videos, but the problem right now is that our lecturer doesn't have much materials to teach us with this advanced technology.

4.2.2 Problems faced when using VR experiences and 360-degree videos at university

Echoing Nurul's last sentence, 'Che Mamat' said, "I feel there should be many more things (contents) using VR and 360-degree videos but I also understand they're not easy to create. Maybe if there are more courses using VR, more students can learn using this technology." Another challenge for university students when they use technology enhanced learning materials is related to technical issues, namely limited access to mobile Internet data and also connectivity problems when they use public networks on campus. These issues are not just annoying, but they hinder wider acceptance and use of technology like VR experiences and 360-degree videos. In the words of 'Ahmad Afnan':

Other than the connection problems, the most common problem at this time is that not all students have VR goggles, so it's quite complicated to watch the videos because I need to make the phone stable to focus at the best point, and I need to scroll the screen to see the whole video all the time. This takes a lot of my time and sometimes I lose the key points in the VR videos. Next, the sound is slow. Although, I am using earphones with the highest volume I cannot hear clearly… Our lecturer must create VR with higher quality in future.

4.2.3 Feelings after being chosen to test VR experiences and 360-degree videos for the course

On the whole, all of the participants appreciate being given the chance to test and use VR experiences and 360-degree videos for their English for Professional Interactions course. They particularly loved the opportunity to try out the technology, the chance to get more exposure to key skills in their course and also the chance to learn in a modern way that is totally different from the traditional methods that they are used to. As 'Siti Zaleha' observed:

This semester I got exposure to new technology and I learned about the professional worker of the future. In class, we don't just learn about English, but the lecturer also teaches about how to use 360° Degrees (videos) and Virtual Reality out of class using our own initiatives. As students we will become more advanced in technology and I think this style is an effective learning method, similar to the 21st century learning concept. I think we need more chances to learn in this method even for the other subjects and courses.

4.2.4 Improvements needed to make VR experiences and 360-degree videos more useful

Many participants commented about the overall 'production value' of the 360-degree virtual reality experiences that need to be improved, if the project is planned for wider dissemination and

use in the future. They were particularly annoyed with the low sound quality of the VR experiences even though they feel that the videos are of sufficiently high quality. The fact that these VR experiences and 360-degree videos were prepared for a language course where communication skill is paramount to success makes this a thoroughly valid point. As 'Zachary' mentions, "Another way is that you should probably put subtitles to support the audio of the video because I couldn't really hear well. Also, everyone's pronunciations are a different so subtitles will be very handy." Another enlightening comment was made by 'Nurain Ahmed':

Maybe the video doesn't have to be related to lectures all the time? I mean maybe, the lecturer can also do online question and answer sessions from time to time or maybe we play online question games, so that students can enjoy the class more. The online games and online quizzes can test their grammar or vocabulary for the professional workplace, maybe? Students will definitely feel more excited to do these things because the class will feel more relaxed. Then, we can just revise on our own using VR after class time.

4.2.5 Whether participants support (or not) wider deployment of VR and 360-degree videos

From the 160 participants involved in this study, 158 or an impressive 98.75% support the use of VR experiences and 360-degree videos for teaching and learning at university. Just two participants or 1.25% did not support the wider deployment of these Education 4.0 learning technologies. For 'Siti Zafirah', she is against the use of these technologies for two reasons. First, network access to the Internet on campus is very bad. And second, she feels that she has no choices but to buy VR goggles. 'Ahmad Zickry' also disagreed with any initiatives to widen the use of VR and 360-degree videos:

I strongly disagree with VR-360 technology because it requires strong Internet connection. However, as you know on this campus the Internet connection is very weak and too slow for learning.

> When I use the VR and 360-degree videos, it turns out to be someone else talking but someone else's face had come out. What kind of learning is this? This is rubbish!

For the majority of the respondents, they believe that VR experiences and 360-degree videos represent the future of teaching and learning in Malaysia. They, therefore, support these technological initiatives even though they too face some difficulties related to Internet connection and not having access to VR goggles. 'Alia Bakar' shared her insights on this matter:

> I agree totally with the usage of the VR and 360-degree videos. It's time to change our teaching and learning style. This is a new road that our university must take if they want to use this teaching style. Some of us students, we also want to experience new things while we're still studying. So, I think this new method of learning and teaching is good for students like myself. Maybe by using this method, students will feel more excited to learn difficult subjects and it will be easy for them to revise subjects. All we have to do is just replay stuff.

CONCLUSION

There are barriers to the wider adoption of Education 4.0 learning technologies at university level in Malaysia. These barriers are mostly related to technical issues, like patchy connections to the Internet and limited materials available that take advantage of VR experiences and 360-degree videos in delivering quality educational contents. That being said, these barriers should not stop Malaysian university lecturers and instructors from becoming learning technologists who strive to make learner driven learning a reality. In truth, technological tools, development software and related apps are now easily available in the mainstream consumer market that allow for the creation and development of cutting edge teaching and learning materials. In addition, the boom in Industry 4.0 manufacturing has brought down the prices of these tools, software and apps, making them more affordable for self-funded university educators to start their own teaching and learning innovation projects.

This empirical study contributes to the literature, looking specifically at VR experiences and 360-degree videos to deliver quality educational contents to teach specific (and difficult) skills in English for Professional Interactions. Employing 360-degree spherical video cameras and software that can record, render and playback immersive real life contents, these contents can then be post-processed into VR experiences that are not just immersive but offer limitless opportunities for learning exposure. Both technologies allow for learner driven learning to happen, for a group of 160 English learners at a public university campus in Malaysia. The results are very encouraging, as seen in the numerical and textual data presented in this paper. Immersion followed by exposure helped the learners (end-users) to acquire the specific skills that they need and to practice for course-related assessments even with limited classroom contact. With these concrete data, it is possible to imagine that VR experiences, 360-degree videos and other Education 4.0 technologies will soon move into the mainstream and bring true learner driven 21st century learning to university classrooms.

REFERENCES

3DLabs (2019). Virtual Reality and Augmented Reality. http://www.3d-labs.co.uk/virtual-reality/.

Accessed 15 October 2019.

Adnan, A. H. M. (2018). Industry 4.0 skill sets, higher-order thinking skills and gamification: Lessons from 'Potentia Project', Malaysia (Plenary Panel Presentation). Proceedings from TING X 2018: The Tenth National Meeting of Teachers (Temu Ilmiah Nasional Guru) 'Innovation in Education for Indonesia 4.0'. Tangerang: Universitas Terbuka Indonesia.

Adnan, A. H. M. (2019). Education 4.0 technologies, Industry 4.0 skills and the critical roles of inventors, innovators and developers. [Plenary] Paper presented at the International Invention, Innovative & Creative Conference (InIIC Series 2/2019), Kuala Lumpur, Malaysia.

Adnan, A. H. M., Ahmad, M. K., Yusof, A. A., Mohd Kamal, M. A., & Mustafa Kamal, N. N. (2019). English Language Simulations Augmented with 360-degree spherical videos (ELSA 360°- Videos): 'Virtual Reality' real life learning! In MNNF Publisher (Ed.), Leading Towards Creativity & Innovation (Series 1) (pp. 82.88). Senawang: MNNF Publisher.

AdvancED (2015). Learning in 3D: Making STEM Real. https://www.advanc-ed.org/source/learning- 3d-making-stem-real. Accessed 15 October 2019.

Ahmad, M. K., Adnan, A. H. M., Yusof, A. A., Mohd Kamal, M. A., & Mustafa Kamal, N. N. (2019). Using new technologies to teach English in Malaysia – issues and challenges. In MNNF Network (Ed.), Proceedings of the International Invention, Innovative & Creative (InIIC) Conference, Series 1/2019 (pp. 203-207). Senawang: MNNF Network.

Aniwaa (2019). The Ultimate VR, AR, MR Guide. https://www.aniwaa.com/guide/vr-ar/ultimate-vr-ar- mr-guide/. Accessed 15 October 2019

Davies, A., Fidler, D., & Gorbis, M. (2011). Future Work Skills 2020. Palo Alto, CA: Institute for the Future, University of Phoenix Research Institute.

Doucet, A., Evers, J., Guerra, E., Lopez, N., Soskil, M., & Timmers, K. (2018). Teaching in the Fourth Industrial Revolution: Standing at the Precipice. Oxford: Routledge.

Ehlers, U. D. & Kellermann, S. A. (2019). Future Skills: The Future of Learning and Higher Education.

Karlsruhe: International Future Skills Delphi Survey.

Geertz, C. (1973). The Interpretation of Cultures: Selected Essays. New York, NY: Basic Books.

Leonhard, G. (2019). As technology becomes cognitive, all paths must lead to collective human flourishing. https://www.forbes.com/sites/cognitiveworld/2019/02/25/as-technology-becomes- cognitive-all-paths-must-lead-to-collective-human-flourishing/. Accessed 15 October 2019.

Madigan, P. (2018). A spotlight on virtual reality in the English classroom. Metaphor, 2, 56-58. Mohd, K. N., Adnan, A. H. M., Yusof, A. A., Ahmad, M. K., & Mohd Kamal, M. A. (2019). Teaching

Arabic language to Malaysian university students using education technologies based on Education 4.0 principles. Paper presented at the International Invention, Innovative & Creative Conference (InIIC Series 2/2019), Kuala Lumpur, Malaysia.

Mustafa Kamal, N. N., Adnan, A. H. M., Yusof, A. A., Ahmad, M. K., & Mohd Kamal, M. A. (2019). 'Immersive Interactive Educational Experiences' – adopting Education 5.0, Industry 4.0 learning technologies for Malaysian universities. In MNNF Network (Ed.),

Proceedings of the International Invention, Innovative & Creative (InIIC) Conference, Series 1/2019 (pp. 190-196). Senawang: MNNF Network.

Rüfenacht, M. (2017). Education 5.0 why we need to adjust the education system. https://medium. com/@MattiaSuisse/education-5-0-why-i-think-we-need-to-adjust-the-education-system-4a669 b26396d. Accessed 15 October 2019.

Schwab, K. (2016). The Fourth Industrial Revolution. Geneva: World Economic Forum.

Schwab, K., & Davis, N. (2018). Shaping the Fourth Industrial Revolution. Geneva: World Economic Forum.

Taplin, J. (2017). Move Fast and Break Things: How Facebook, Google, and Amazon Have Cornered Culture and What it Means for All of Us. London: Pan Books.

Times Higher Education (2019). Preparing for Education 4.0. https:// www.timeshighereducation. com/hub/jisc/p/preparing-education-40. Accessed 15 October 2019.

World Economic Forum (2016). The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution. Geneva: World Economic Forum.

World Economic Forum (2018). The Future of Jobs Report 2018. Geneva: World Economic Foru

SIR: Exploring the Significant Role of Phonetics in the Teaching of Pronunciation

Sueb Ibrahim, John Francis Noyan, Lilly Metom, Ismariani Ismail, Zubaidah Bohari

Academy of Language Studies,
UiTM Sarawak, Samarahan Campus ebraiz@uitm.edu.my
Academy of Language Studies,
UiTM Sarawak, Samarahan Campus jnoyan@uitm.edu.my
Academy of Language Studies, UiTM Sarawak, Samarahan Campus
lillymetom@uitm.edu.my
Faculty of Computer Science and Mathematics UiTM Sarawak, Samarahan Campus ismariani@uitm.edu.my
Faculty of Computer Science and Mathematics UiTM Sarawak, Samarahan Campus zubaidah@uitm.edu.my

Abstract: Pronunciation is one of the most overlooked aspects of English language teaching, despite the fact that its accuracy is the basis for effective communication in English. Malaysian learners generally encounter challenges in pronouncing English words due to the fact that there are many English phonemes (i.e. 44 phonemes). Hence, this study has developed an essential and practical tool called SIR to help learners pronounce the English words correctly with the aid of phonetic sounds and symbols. SIR stands for 'Say It Right', which is an interactive multimedia software that emphasizes phonetic sounds and symbols from the English phonemes. SIR's novelty lies in its specific focus on commonly mispronounced words in English and the phonological awareness the software introduces into the learner's cognition to facilitate comprehension and production Taking phonetics as a framework, SIR makes use of the different components of English phonetics in order to apply them in the software. The tool guides learners on the correct pronunciation of English words based on the 44 English phonemes. Since English spelling is not a reliable guide to pronunciation, the phonetic symbols serve as a dependable guide to correct pronunciation.

Keywords: *English language learning, phonetics, pronunciation, SIR*

INTRODUCTION

Pronunciation efficacy among foreign and/or second learners depends to a great extent on their ability to acquire sounds discrimination skills and understand how these sounds are perceived and understood at the phonetical and phonological level (Collins & Mees, 2003). The need to communicate effectively and be clearly understood – meaning good and clear pronunciation, has become an increasingly pertinent issue in the context of English language learning in the Malaysian ESL classroom. According to Morley (1991), limited pronunciation skills can undermine not only a learner's communicative ability but also his/her self-confidence, restrict social interaction, and negatively influence estimations of a learner's credibility and abilities. Studies have also indicated that poor pronunciation or heavily-accented English tends to be stigmatized at the workplace, and speakers often reported being discriminated against when it comes to employment and promotion (Derwing, 2003).

SAY IT RIGHT (SIR) is an interactive software, which attempts to introduce learners to the world of phonetics in a fun and engaging atmosphere with a clear focus on self-paced learning. Unlike other interactive software, SIR's novelty lies in its focused activities on commonly mispronounced words in the Malaysian Second Language Speaking context and the pre-activity stage in which the learners are gently immersed in instruction on certain basic phonemes of English found in the International Phonetic Alphabet (IPA). The element of student-teacher interaction amid a friendly environment manifests itself readily in the Modeling-Perception Phase when students are free to ask questions to seek further clarification even when the instruction is in progress. To build confidence in the learners, they are required to repeat the phonemes and later individual words after the facilitator correctly. Only when the learners are reasonably comfortable in their understanding of how phonemes work would they then be ready to engage in computer-based pronunciation awareness and enrichment activities in SIR.

This paper seeks to explore the significant role of phonetics in the teaching of pronunciation to learners and how they can benefit from explicit teaching of phonetic symbols in the International Phonetic Alphabet (IPA) chart.

LITERATURE REVIEW

Several studies had been conducted in the past on the importance of English pronunciation in communication (e.g. Shak, Chang, Stephen (2016), who investigated the role of pronunciation in employability among Malaysian graduates; Lee (2008) who carried out an action research on the teaching pronunciation of English by utilising a computer-assisted learning software in an Institute of Taiwan; Farhat and Dzakari (2017) who carried out an experimental study to investigate the effect of computer by using phonetic videos on pronunciation).

It is undeniable that pronunciation is crucially perceived as an important aspect of communication that should be incorporated into language teaching and learning (Gilakjani, 2012). Considering the essential reasons for learning pronunciation, namely, perceived competence, as well as clarity and intelligibility aspects, it is a "must" skill for any English language learner. Correct pronunciation is a crucial part of communicative competence. Gilakjani (2012) added that pronunciation instruction assists the learners in acquiring a better understanding of native speakers; hence, this also helps enriching their capability to interact with ease and efficiently.

Many researchers have affirmed the significance of international intelligibility as a key component in communication and pronunciation experts have emphasised improved intelligibility as the most important goal of the classroom instruction in pronunciation (Rajadurai, 2007; Jenkins, 2000; Seidlhofer, 2000). Although pronunciation is admittedly only one of several components contributing towards intelligible speech, intelligibility and "error gravity" studies attempting to isolate the role of particular linguistic features relative to others in the determination of intelligibility have consistently pointed to the importance of the pronunciation component. A study of interlanguage talk in a classroom of international students by Jenkins (1998) indicated that pronunciation is one single most problematic communication aspect. It is obvious that pronunciation is a salient component in effective communication and its significance has been verified by relevant parties that include not only researchers but also student respondents, teachers and even immigrants (Rajadurai, 2001; Derwing, 2003). The evidence points to poor level of pronunciation and with speakers with poor pronunciation will have communication problems

no matter how well they control other aspects like grammar and vocabulary (Celce-Murcia et al., 1996).

Despite much agreement on the significant value of pronunciation for effective communication, pronunciation instruction in the context of English as a Second Language (ESL) and English as a Foreign Language has been neglected (Harmer, 2007). One probable explanation as to why pronunciation has long been neglected according to Darcy, Ewert and Lidster (2012) is simply that pronunciation is difficult to teach for several reasons. Teachers are often left without clear guidelines and we are confronted with contradictory purposes and practices for pronunciation instruction. This

indeed the case where there is no well-established systematic way of deciding what to teach, when and how to do it (Derwing & Foote, 2011). In fact, a common problem is in deciding whether to focus on segmentals and suprasegmentals, and to what extent for each component. A related challenge is how to address production and perception of English words. While there is evidence in the literature that both are necessary in a balanced approach to pronunciation development, the guidelines for teacher training and classroom materials are well-defined (Rajadurai, 2001; Derwing, 2003). Pronunciation teaching is often treated with least attention in the Malaysian ESL classes (Nair, Krishnasamy & De Mello, 2006; Pillai, 2017). One probably could be that teachers are faced with the tension that arises between whether to teach pronunciation towards preparing students to achieve international intelligibility in one's speeches, which is very subjective as to the meaning of intelligibility itself or to train students towards native-like pronunciation ability, which is a difficult goal to achieve and also it might mean losing one's local identity. Nonetheless, as English continues to be a global language, there needs to be specific efforts on the part English language teachers to teach pronunciation either explicitly or implicitly in view of such distinctive divergence in the phonology of Malaysian English due to contact with local languages and cultures that exert influence via mother tongue transfer, which definitely impedes intelligibility particularly in the global context.

OBJECTIVES

There are two main objectives of SIR:

1. To familiarize learners with the English phonetic system by introducing the 44 phonemes of the English language in the in the International Phonetic Alphabet (IPA), and
2. To create awareness about the importance of correct pronunciation of English words.

DESCRIPTIONS OF 'SAY IT RIGHT' (SIR)

SIR is a multimedia software which offers a new dimension to pronounce problematic English words correctly through its interactive approach. This innovative software is developed specifically for Malaysian learners of English as the target focus, particularly emphasizing phonetic sounds and symbols from the English phonemes (44 phonemes) to guide learners on the correct pronunciation of words. SIR functions as supplementary learning software that can benefit the target users in acquiring correct pronunciation of English words.

The following are several advantages of using SIR:

1. It promotes self-directed learning.

2. It provides immediate feedback to the learners.

3. It makes learning fun and interactive.

4. It enables learners to do their self-assessment.

SIR provides the learners with a learning menu, exercises and ways to pronounce the word correctly. All learning items are inclusive of 44 English phonemes. The learning menu comprises all the 26 letters in the English alphabet, which range from 'a' to 'z'. Learners interact with the learning process by clicking on the words to hear their correct pronunciation. A round of applause will be

immediately heard if the answer is correct, whereas a buzz will sound if the

answer is wrong. The selected words comprise problematic words, which are commonly mispronounced by Malaysian speakers, e.g. ‘blood’, ‘debris’, ‘gesture’, ‘salmon’, ‘tuition’, ‘Wednesday’, ‘vegetable’, etc. It is noted that the pronunciation is based on the standard British English.

Fig. 1 The introduction page

Fig. 2 The menu page

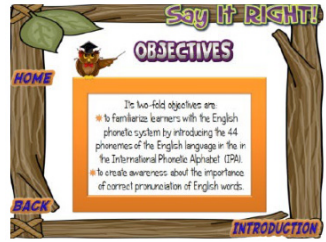


Fig. 3 The objective page - featuring its two main objectives.

Fig. 4 The learning page

Fig. 5 The learning page

Fig. 6 The practice page

Unlike other interactive software available in the market, SIR's novelty lies in its specific focus on commonly mispronounced words in English and the phonological awareness the software introduces into the learner's cognition to facilitate comprehension and production. Phonological awareness which involves detecting, discriminating and manipulating the sound segment of spoken words while knowing that the smallest unit of sound can affect the meaning is an integral component of pronunciation learning. It also denotes awareness of sound patterns and the ability to isolate one sound from the other.

In terms of its usefulness, in the context of SIR interactive software, learners will be engaged in various linguistic operations that make use of information about the sound structure of the language, that is, all the phonemic aspects associated with the system of pronunciation of English. The ability to perceive, detect, isolate and manipulate the sound structure of the English language underlies the learning principles of SIR interactive software. This innovative software promotes self-directed learning, provides immediate feedback, makes learning fun and interactive, as well as enables learners to do self-assessment. Hence, learners will find it easy to relate to and engage with the activities and exercises provided.

Potential customers for SIR are the English language learners and teachers in schools and higher learning institutions. This software is highly recommended for every school or institution resource centre to provide a learning and teaching aid for a practical, fun and educational means of teaching and learning the English phonetics and phonemes. SIR is also attractive to any individuals who wish to enhance and master their English pronunciation.

METHODOLOGY

Sample

The software was tested out with 45 Part 1 students of UiTM Sarawak, comprising Faculty of Chemical Engineering and Faculty of Electrical Engineering.

Instrumentation

For the purpose of this study, a set of questionnaires was used. The questionnaire was Usability Instrument. The instrument was selected because it has strong validity and reliability indices and has been used extensively in research. The estimated reliability at the overall level of Usability Instrument using Cronbach's Coefficient Alpha was. .887. The Usability Instrument consists of three sections : (1) Profile of the Respondent, (2) Evaluation of multimedia elements and (3) User satisfaction. A five-point scale for rating was used and valued. The

level of satisfaction of each item is indicated by referring to the mean score of each item. (See Table 1)

Table 1. Mean scores

Level of Satisfaction	Mean
Low	1.00 to 2.39
Medium	2.40 to 3.79
High	3.80 to 5.00

Source: Landell, K. (1997)

Testing of Software

The software was tested out with 45 Part 1 students of UiTM Sarawak, comprising Faculty of Chemical Engineering and Faculty of Electrical Engineering. The time taken was approximately 1 hour. The class began with the students viewing the software. All the words (in alphabetical order) were selected. They viewed each word and listened to its correct pronunciation. The students were then asked to pronounce the given words and then do the various exercises that followed. After the demonstration of SIR software, the students were given a set of questionnaires and they were asked to rate each item that related to SIR.

Results and Findings

Table 2 shows the mean score and the standard deviation of all of the multimedia elements in SIR. The findings depicted that all of the multimedia elements in SIR had high mean scores ranging from 3.85 (SD=0.612) to 4.19 (SD=0.739). From the findings, it is revealed that the respondents were satisfied with the multimedia elements in SIR.

Table 2. The mean scores of the multimedia element in SIR

Multimedia Element	N	Minimum	Maximum	Mean	Std. Deviation
Graphic	45	2.00	5.00	4.10	0.745
Sound	45	2.50	5.00	4.19	0.739
Interactivity	45	1.50	5.00	3.99	0.805
Interface	45	2.00	5.00	4.17	0.709
Text	45	1.40	5.00	3.85	0.612
Valid N (listwise)	45				

As depicted in Table 3, all the items of the user satisfaction elements in SIR had high mean scores ranging from 4.24 (SD=0.857) to 4.67 (SD=0.603). From the findings, it is revealed that the respondents were satisfied with the user satisfaction elements in SIR.

Table 3. The mean scores of the user satisfaction element in SIR

User Satisfaction	N	Minimum	Maximum	Mean	Std. Deviation
• The software application is easy to understand and use	45	2	5	4.27	0.889
• The ideas and concepts incorporated within the software application are clearly presented and easy to follow	45	2	5	4.29	0.727

User Satisfaction	N	Minimum	Maximum	Mean	Std. Deviation
The content covered all essential information (both theory and practice)	45	1	5	4.24	0.857
The software helps me learn pronunciation effectively	45	2	5	4.51	0.727
The software creates awareness of the significance of phonetics and pronunciation to me	45	2	5	4.56	0.659
The software helps me to understand my own pronunciation better	45	2	5	4.67	0.603
The phonetic symbols in the (IPA) chart help me to understand English sounds better	45	2	5	4.53	0.694
Valid N (listwise)	45				

In relation to phonological awareness, the respondents were satisfied that SIR had helped them learn pronunciation effectively. The mean score was 4.51(SD = 0.727). The respondents were also satisfied that SIR had made them aware the significance of phonetics and pronunciation. The mean score was 4.56 (SD=0.659). From the findings, it is also revealed that the respondents were satisfied that SIR had helped them to understand their own pronunciation better. The mean score was 4.67 (SD=0.603). Similarly, the respondents were satisfied that the phonetic symbols (IPA) in SIR had helped them to understand English sounds better. . The mean score was 4.53 (SD=0.694).

As it is evident from the findings, Say It Right (SIR) was used to good effect as a supplementary learning aid. The lecturer was able to attract the students' attention to the lesson and the students displayed a desire to know more about the learning software and also the anxiety to know what would happen next in the learning process. Since there was class involvement by the students, the lecturer was able to make the class lively. From the given exercises, the students did extremely well with the exercises. They managed to answer all the questions correctly even in the comparatively difficult exercises, such as identifying the correct pronunciation of the given words. SIR proved it could convey information instantly. The teacher did not need to explain in length to make the students understand each word and its correct pronunciation. It was because the pronunciation and the phonetic symbols each word were supplied in SIR.

Significance of Phonetics in Pronunciation Teaching

For a long time, teachers have been concerned with finding out the appropriate way of teaching the sounds of a foreign language without using the orthographic alphabet. Among the most useful suggestions offered is the use of the International Phonetic Alphabet (IPA). The IPA aims to provide visually distinctive symbols for all speech sounds which are phonologically distinct across the different languages.

In the same vein, phonetics has brought new insights into the teaching

and learning of pronunciation. Concerned with "the study of the physical properties of sounds and their place and manner of articulation in the vocal tract", phonetics is a tool of paramount importance that is used in the systematic teaching of pronunciation. For instance, in any description of the English sound system, speech sounds are categorised into consonants and vowels. According to Roach (2010), awareness of this and how phonemes combine to produce individual words is useful as many errors made by students are largely due to slight differences in sound articulation and production.

The nature of phonetics can be explained in terms of what constitute the speech sounds produced in a particular language. In any language, we can identify a small number of regularly used sounds (vowels and consonants) that we call phonemes, for example, the vowels in the words 'pin' and 'pen' are different phonemes, and so are the consonants at the beginning of the words 'pet' and 'bet'. Because of the notoriously confusing nature of English spelling, it is particularly important to think of English pronunciation in terms of phonemes rather than letters of the alphabet. One must be aware, for example, that the word 'enough' begins with same vowel phoneme as that at the beginning of 'inept' and ends with the same consonant as 'stuff". Hence, it is important for second/foreign language learners to understand the phoneme or single unit of sound produced in the target language and correspondingly how these sounds combine to form individual words (Roach, 2010). Say It Right (SIR), unlike any other computer-based interactive pronunciation teaching software, introduces learners to the world of phonetics by familiarising them with the 44 phonemes (consonants and vowels) in the English sound system. A gentle introduction to these 44 sounds found in the International Phonetic Alphabet (IPA) will be taught through the Modelling-Production-Practice protocol.

CONCLUSION

Say It Right (SIR) has great potential for success in any pedagogical setting, from schools to universities as it combines strong general learning principles with a clear focus on practical phonetics taught in a fun and friendly atmosphere through its Modeling-Perception Approach. SIR's emphasis on self-paced learning and confidence building through guided awareness, mediated practice and production when learners are engaged in its activities suggests it is highly implementable in the teaching of English pronunciation. The overwhelmingly positive response of the student subjects in the pilot experiment adds credence to SIR's ability to create strong learner interest in practical phonetics in general and pronunciation learning in particular. Inclusive of 44 phonemic symbols which are arranged in a chart, they can be part of every student's learning resources. These phonemic symbols in SIR are simple and it has key words that show the sound of each symbol. These 44 phonemics symbols could be a very useful tool and resource especially in helping learners understand the importance of length and voicing. The phonetic symbols in SIR are a totally reliable guide in which each symbol represents one sound consistently. With the aid of the phonetic symbols, learners can become independent learners. Equipped with multimedia elements, SIR is able to arouse the learners' interest and stimulate their eagerness to experience learning English phonetics using the software. In fact, with phonetic symbols as the visual aid and guide, learners can use their eyes to help their ears. Thus, the more senses learners use, the better they will learn.

REFERENCES

Celce-Murcia, M., Brinton, Donna and Goodwin, Janet (1996). Teaching Pronunciation: Reference for Teachers of English of Other Languages. Cambridge: Cambridge University Press.

Collins, B. & Mees, I. M. (2003). Practical Phonetics and Phonology. London: Routledge.

Darcy, I., Ewert, D. & Lidster, R. (2012). "Bringing Pronunciation Instruction back into the classroom: An ESL teachers' Pronunciation Toolbox". In J. Levis and K. LeVelle (Eds.) Proceedings of the 3rd Annual Pronunciation in Second Language Learning and Teaching Conference (pp.93 - 108). Ames, IA: Iowa State University.

Derwing, T.M & Foote, J.A. 2011. "How well do general-skills ESL textbooks address pronunciation?"

TESL Canada Journal, 30(1), 23 - 44.

Derwing, T. M. (2003) What do ESL students say about their accents? Canadian Modern Language Review, 59,545–64.

Derwing, Tracey M. & Rossiter, Marian J. (2003) The effects of pronunciation instruction on the accuracy, fluency and complexity of L2 accented speech. Applied Language Learning, 13, 1–17.

Gilakjani, A. B. (2012). The Significance of Pronunciation in English Language Teaching. English Language Teaching. March 2012. Retrieved from: https://www.researchgate.net/publication/267722924

Harmer, J. (2007). The Practice of English language Teaching. London: Pearson Longman.

Lee, S.T. (2008). Teaching Pronunciation of English using computer assisted learning software: An action research study in an institute of Taiwan. (Doctoral dissertation unpublished). School of Education, Faculty of Education. Australian Catholic University Research Services.

Morley, J. (1998). Trippingly on the tongue: Putting serious speech/ pronunciation instruction back in the TESOL equation, ESL Magazine, issue January/ February, 20-23

Nair, R., Krishnasamy, R. & De Mello, G. (2006). Rethinking the Teaching of Pronunciation in the ESL classroom. The English Teacher Vol. XXXV: 27 – 40

Pillai, S. (2017). Local features of English pronunciation: To embrace or ignore in the ELT classroom J-ELLiT (Journal of English Language, Literature, and Teaching) Volume 1, Number 1, 2017 Rajadurai, J. (2001). An Investigation of the Effectiveness of Teaching Pronunciation to Malaysian

TESOL Students. Forum, 39(3), 10-15.

Rajadurai, J. (2007). Revisiting concentric circles: conceptual and sociolinguistic considerations. Vol.7. Issue 4.

Roach, P. (2010). English Phonetics and Phonology: A Practical Course. London: Cambridge University Press.

Seidlhofer, B. (2000). Mind the gap: English as a mother tongue versus English as a lingua franca. In Greenwood, J. (2002). The role of teaching English pronunciation: issues and approaches

Shak, P., Chang, S. L., & Stephen, J. (2016). Problems: A Case Study on English Pronunciation Errors of Low Proficient Students. International Journal of Language Education and Applied Linguistics. Retrieved from http://ijleal.ump.edu.my

Educator Acceptance of Education 5.0@ UiTM Framework and Initiatives: A Descriptive Analysisn

Mohd Idzwan Mohd Salleh, Zainuddin Ibrahim, Khairil Iskandar Othman, Haslinda Yusoff, Suriyani Ariffin

Academic Affairs Division, Universiti Teknologi MARA 40450 Shah Alam, Selangor
Faculty of Information Management, Universiti Teknologi MARA 40170 Puncak Perdana, Selangor
idzwan201@uitm.edu.my
Faculty of Art and Design, Universiti Teknologi MARA 40450 Shah Alam, Selangor macintag_01@ uitm.edu.my
Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA 40450 Shah Alam, Selangor
khairil915@uitm.edu.my, suriyani@tmsk.uitm.edu.my
Faculty of Accounting, Universiti Teknologi MARA 42300 Puncak Alam, Selangor
hasli229@uitm.edu.my
**Corresponding Autho*

Abstract: As technology is rapidly changing our world, the way of life and a diverse array of the landscape of education, people can get education easy and it can be accessed anytime and anywhere on their own choice. Nowadays, the goal of people go to higher education is different, there is not the only the purpose of better life anymore, but it is the choice of people as students whether they want to get knowledge and skills from the university or through the experience of others or from their own experience. Some educators worry that even though education will never disappear, there will be no university anymore in the future as technology takes place a lot of the ability to teaching and learning. An Education 5.0@UiTM is a new proposed educational transformation framework and initiatives in teaching and learning pedagogy and ecosystem to face a wave of change every day and indirectly promotes many challenges. This initial study was conducted to identify the educator acceptance level of the new proposed framework and initiatives across 26 faculties and 35 campuses of Universiti Teknologi MARA Malaysia. Data was acquired through participated 370 educators in the roadshows and talks about Education 5.0@UiTM framework and initiatives. The results was analysed using descriptive analysis and the

findings had provided insights to the university management in strategizing efficient outcome/output and improvement to ensure the successful implementation of Education 5.0@UiTM framework and initiatives by 2021.

Keywords: *Education 5.0@UiTM; educational transformation framework; teaching and learning; Industrial Revolution 4.0; graduate employability*

INTRODUCTION

Industrial Revolution 4.0 (IR4.0) provides a new catalyst for the change of the current education system in Malaysia. It is driven by technological advancements such as artificial intelligence, virtual reality, data analytics, and the Internet of Things. Such advancements in the workplace allow new ways of task completion, bring new value-creation opportunities for organizations and businesses, and maintain partnership and long-term relationships with customers. Based on key findings outlined by Azmi, Kamin, Noordin, and Ahmad (2018), present graduates lacked understanding of the IR4.0 concept; they are unprepared for future careers because they relied too heavily on their academic programs to train them and universities are not adequately preparing students for jobs. Therefore, universities have to regularly review the relevancy of their current academic programs especially to prepare students with necessary skills for future IR4.0 workforce. Besides knowledge and technical skills, universities also have to equip students with extra soft skills to enhance their critical thinking, problem- solving, leadership skills, and lifelong learning to fulfill the changing demands of the IR4.0 job market.

Universiti Teknologi MARA (UiTM), the largest public university in Malaysia, is consistently ranked as the most famous place to study. From July 2019, UiTM have 160,957 students with 17,488 academic and non- academic staffs. In the past 60 years, the university has grown from an institution to a large university with 35 campuses and 515 academic programs. Since 2016, the university has actively engaged in enhancing existing academic programs, launching data analytics lab and smart classrooms in various faculties and state campuses to support the country's IR4.0 initiative. Earlier this year, the university introduced UiTM's Pioneering University

Program to accelerate the design and delivery of high-end technical vocational education and training (HE TVET) programs where the university integrates disruptive technology syllabus in the certificate, degree, and professional programs aligned with the National Policy on Industry 4.0. Apart from this, UiTM has recently launched a new brand of academic ecosystem named as Education 5.0@UiTM intending to humanize higher education learning in response to IR4.0. Accordingly, this paper seeks to identify the acceptance level of UiTM's educators through the preliminary surveys to better understand their teaching practices with the aim to promote Education 5.0@UiTM across the nation.

LITERATURE REVIEW

Education 5.0@UiTM is defined as a learning-centric ecosystem that is sustainable, balanced and principled, driven by values and concepts of Adab and Amanah, powered by intellect and afforded by new, ubiquitous technologies (Academic Affairs Division UiTM, 2019). It is not about sophisticated software and the machine's ability to do what people do, but rather what people can do well with smart technology and machines. Education 5.0@UiTM aims at nourishing the progressive thinkers who are agents of their education, agile, strong principles, and a dynamic and globalized mentality. It liberates learning from the constraints of academic weeks and places, shifts from structured contents to seamless learning to experience meaningful learning. Learning bits and micro-based programs continue to support the learner's learning process. The students now have the option of selecting courses from the best professors recognized for their academic background and expertise. Education 5.0@UiTM can be achieved through the implementation of five pillars as illustrated in Figure 1:

1. Coherent and Relevant Curriculum
2. Innovative Delivery and Assessment
3. Meaningful Learning Experience
4. Transformative Learning Environment
5. Inspiring Educators

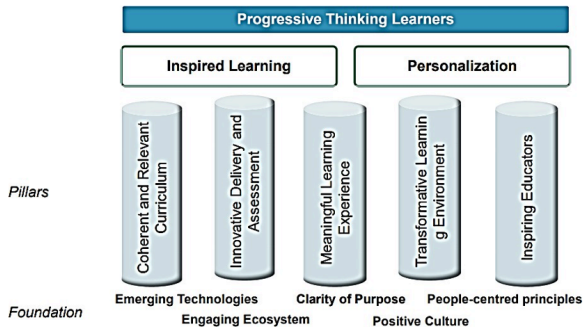


Figure 1: Education 5.0@UiTM Framework

Explaining the framework, the elements of Education 5.0@UiTM are the goal, the pillars, and the foundation. To nurture progressive thinking learners who are creative, innovative, and adaptive to be versatile professionals, job creators, and leaders in future through inspired learning and personalization, the goal can be attained by the means of five pillars of the curriculum, delivery, learning experience, learning environment, and educators driven by clarity of purpose, positive culture, appropriate emerging technologies, engaging ecosystem, and people-centred principles. These pillars will be achieved by different strategies to produce specific outcomes and output for the next three years (2019-2021) to bring changes to the traditional teaching and learning (T&L) landscape in UiTM (Figure 2).

PILLAR	STRATEGY	OUTCOME/OUTPUT 2019	OUTCOME/OUTPUT 2020	OUTCOME/OUTPUT 2021	RESPONSIBILITY
Coherent and Relevant Curriculum	Design and deliver curriculum that promotes values and future thinking, with strong linkages and exposure to the real world	❑ 1 Smart-industrial-community collaboration Framework ❑ Multidiscipline and 4IR elective courses across campuses through Wisdom Wednesday ❑ Credit transfer available for 3 UiTM MOOC ❑ Establishment of the Institute of Multidisciplinary Studies ❑ Inception of the *Chancellor Scholars Program* ❑ 5 Elective courses individually developed and offered by renowned professors/experts in the area	❑ 10% of Diploma program offered are HE TVET ❑ 3 Industry on campus ❑ Curriculum, teaching, MOOC and faculty partnerships with local and global universities : 10 Partnerships ❑ A LEAD 2 FUTURE: 200 Multidiscipline and 4IR elective courses renowned professors/experts in the area ❑ *Chancellor Scholars Program begin*	❑ Transdisciplinary/ Hybrid And Modular Based Curriculum started for 3 Programs ❑ Global learning elements/modules embedded in 100% of final year courses ❑ Credit transfer available for all UiTM MOOC	Academic Affairs Division InED ICAEN *Faculties and campuses*

Figure 2: Selected Initiatives for 2019-2021 (Academic Affairs Division UiTM, 2019)

RESEARCH METHODOLOGY

An initial study was conducted between July to October 2019 and employed a quantitative approach using the questionnaire survey for data collection. The educators (lecturers) from UiTM faculties and branch campuses were chosen as the study samples. They were selected during their participation in the Education 5.0@UiTM roadshows held by the Academic Affairs Department of the main Shah Alam campus. In total, 370 educators were participated in these series of talks about the Education 5.0@UiTM framework and initiatives.

A questionnaire survey had been distributed to the identified study samples. This preliminary survey instrument was developed to seek relevant input on the extent of educators' acceptance and understanding of Education 5.0@ UiTM framework and initiatives. Also, the instrument was used to seek their opinions about the benefits of the framework and initiatives as well as its implementation in UiTM. The questionnaire survey consisted of 22 questions; which were divided into the three sections, as follows:

1. Section A: General information including educators
2. Section B: General understanding of the framework.
3. Section C: Perception of the benefits of framework implementation.

The questionnaires were distributed to educators via online who participated in the talks. A total of 370 respondents answered the survey based on voluntary participation and quantitative data analysis was carried out using the Statistical Package for Social Sciences (SPSS) software. Specifically, descriptive analysis was performed to investigate the respective educators' acceptance and understanding of Education 5.0@UiTM framework and initiatives as well as the expected outcomes of the framework concepts and practices. Figure 3 shows a summary of the research phases involved in this study, as discussed above.

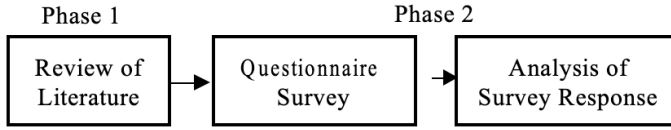


Figure 3: Summary of key research phases

RESULT AND ANALYSIS

This section describes the participants' demographic information and the key findings derived from the analysis of survey results.

4.1 Demographic Profile

In total, there were 138 lecturers, 213 senior lecturers, 15 associate professors, and 4 professors who participated in the surveys from 35 UiTM campuses and 26 faculties around Malaysia.

4.2 General Understanding of the Framework and Initiatives

Respondents were asked about their understanding of the Education 5.0@UiTM ecosystem. The results in Table I indicated that 56% (207) of them had sufficiently understood, followed with 25% (92) of them who had little understood, 17% (62) of them were well understood, and 2% (9) of them were poorly understood.

Table I: Level of understanding about Education 5.0@UiTM ecosystem

Level of Understanding	Total respondents	Percentage
I don't understand anything	9	2%
Not much - need more information	92	25%
Sufficient to act upon it	207	56%
Very good understanding - I can move this initiative	62	17%
Total respondents	370	100%

Next, the respondents were also asked about their understanding of every Education 5.0@UiTM pillar and initiatives as depicted in Table II. More than 50% of them had sufficiently understood all pillars by practicing related teaching activities during Wisdom Wednesday (WW) and Week Without Wall (WWW), engaged in designing HE TVET

programs and using Smart Classrooms (SC) and Big Data (BD) Labs for T&L.

Table II: Level of understanding in every pillars and initiative

Level of Understanding	P1	P2	P3	P4	P5	WW	HETVET	WWW	SC	BD	Average (%)
Nothing	8	7	6	7	5	15	17	8	12	18	3
Not much	80	72	62	75	58	93	120	65	83	115	22
Sufficient	229	224	219	219	222	205	189	204	204	191	57
Very good	53	67	83	69	85	57	44	71	71	46	17
Total respondents	370	370	370	370	370	370	370	370	370	370	100

4.3 Acceptance of the Framework and Initiatives

In measuring the acceptance of Education 5.0@UiTM framework and initiatives, 57% (210) of the respondents accepted that the framework would produce better graduates (Table III).

Table III: Level of acceptance that the framework will produce better graduates

Acceptance level	Total Respondents	Percentage
Maybe	129	35%
No	5	1%
Not Necessarily	26	7%
Yes	210	57%

Similarly, a total of 241 (65%) of them agreed that the framework also would make learning activities more meaningful (Table IV).

Table IV: Level of acceptance that the framework will make learning more meaningful

Acceptance Level	Total Respondents	Percentage
Maybe	112	30%
No	4	1%
Not Necessarily	13	4%
Yes	241	65%

Table V: Level of educator supported

Acceptance Level	Total Respondents	Percentage
Maybe	31	8%
Yes with condition	5	1%
Yes	334	90%

CONCLUSION

This initial study concludes that educators of UiTM had a good understanding of the Education 5.0@UiTM ecosystem including its five strategic pillars and initiatives. Also, they had good acceptance of the Education 5.0@UiTM's framework and its initiatives in offering impactful T&L and enhancing graduates' employability. However, the study has several limitations. Firstly, the study was only used understanding as the key variable to measure acceptance of educators' framework and initiatives. It is highly recommended for future studies to include additional acceptance variables such as external variables, perceived usefulness, perceived ease of use, intention to use, and actual usage by adapting Technology Acceptance Model (TAM)(Venkatesh & Davis, 2000) as the guiding theory. Secondly, the data was acquired through a convenience sampling technique based on the availability of educators to answer the survey questionnaires that limited the generalizability of the findings. Thirdly, several question items were measured using a nominal scale that limited the analysis using inferential statistics. Therefore, it would be useful to employ the ordinal scale for statement items to determine the effects and correlations between the measuring variables so that the acceptance level could be statistically measured either high or low. Fourthly, it would be preferable to perform a comparison of UiTM faculties and campuses of different demographic educators' groups. It would be interesting to compare the results obtained in different educators' groups and see which statements lead to statistically significant differences to identify which group is the effective educators as the champions at the faculties and campuses.

The results of this initial study can be very useful for the management of UiTM campuses to design suitable events and programs in achieving each pillar's outcome/output. Since the implementation of Education 5.0@ UiTM is still relatively new, it is crucial for the respective Academic Affairs Department of the university to continuously promote awareness campaigns for Education 5.0@UiTM among both academics and non- academics as well as students to overcome staff resistance, to change their mindset, and to train students more readily in facing IR4.0. It is mainly worth determining the acceptance level of UiTM's educators to build a credible UiTM by cultivating Adab and Amanah in T&L and to generate employable and future-proof graduates for IR4.0.

REFERENCES

Academic Affairs Division Universiti Teknologi MARA. (2019). Education 5.0: UiTM Academic Compass, Navigating the Future. Shah Alam: UiTM Press. https://doi.org/10.1007/s40196-013-0016-5

Azmi, A. N., Kamin, Y., Noordin, M. K., & Ahmad, A. N. (2018). Towards industrial revolution 4.0:

Employers' expectations on fresh engineering graduates. International Journal of Engineering and Technology(UAE), 7(4), 267–272. https://doi.org/10.14419/ijet.v7i4.28.22593

Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. Management Science, 46(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926

An overview of research topics and focuses of the empirical MOOC literature

Rasheed Abubakar Rasheed, Amirrudin Kamsin, Nor Aniza Abdullah, Abubakar Zakari, Jaafar Zubairu Maitama

Faculty of Computer Science & Information Technology, University of Malaya, 50603 Kuala Lumpur, Malaysia.

**Corresponding Author: noraniza@um.edu.my*

Abstract: Over the years, MOOCs have been an attractive research area and has yielded large quantities of empirical and review studies. However, existing review studies in MOOCs are characterized by short year coverage or focusing on a specific theme. Therefore, we aim to examine the overall research topics, focuses and research productivity of the empirical MOOC literature from 2009 to 2018. Findings show that research in MOOCs have risen significantly since 2013. MOOC studies have mostly focused on learners' completion/dropout, and other learner dropout related topics. Specific types of learners' self-regulation themes in MOOCs were not researched.

Keywords: *MOOCs, Distance education, E-learning, Empirical studies*

INTRODUCTION

Today, MOOCs is one of the most prevalent and most popular form of e-learning that has revolutionized modern education in providing free and global access of online courses in various academic disciplines (Almatrafi, Johri, & Rangwala, 2018; King, Robinson, & Vickers, 2014). Although, this democratization of open and free access of courses has changed along the line since the inception of MOOCs in 2008, as the key providers of MOOC courses such as Coursera and edX have stopped offering certificates and course materials for free (Cook, 2016; Shi, Li, Haller, & Campbell, 2018). Over the last decade, MOOCs have attracted huge attention from e-learning researchers and practitioners especially after the 2012 when the New York times declared 2012 as 'The Year of MOOC' (Pappano, 2012). There has been a substantial growth of research activities and investigation studies

in understanding MOOCs from both teachers, students and pedagogical perspectives leading to the emergence of variety of themes, topics, issues and trends emerging. Similarly, there has also been a considerable number of review studies that examines and reviews various themes and topics in MOOCs. However, these review studies in MOOCs are characterized by short year coverage, usually reporting on MOOC publications of 2 to 3-year span (e.g. see (Liyanagunawardena, Adams, & Williams, 2013; Veletsianos & Shepherdson, 2016; Zhu, Sari, & Lee, 2018)), or focusing on a specific issue/subject in MOOCs (Lee, Watson, & Watson, 2019; Sunar, Abdullah, White, & Davis, 2015). Therefore, we aim to determine the focuses, research topics and overall research productivity of the empirical MOOC studies from the last decade (2009 -2018), to understand what researchers have been focusing on; what MOOC researchers mainly investigate; and also understanding the overall research productivity of the empirical MOOC studies over the last decade.

METHODOLOGY

This study investigates the following three research questions:

1. What are the research focuses in MOOC studies?
2. What are the research topics in MOOC studies?
3. What is the overall research productivity in MOOCs?

In order to fully understand and answer these research questions, we consulted the following electronic databases: ACM Digital Library; IEEE Xplore; Springerlink; Science Direct and Web of Science. We keyed in the word 'MOOC' and/or using 'Massive Open Online Course' into the normal search and advanced search options that best suit each of the identified databases. We adopted an inclusion and exclusion framework for filtering and synthesizing irrelevant set of studies in our MOOC research area, thereby fully focusing our study towards answering our defined research questions. Our inclusion criteria mainly ensure that articles are empirical studies; articles must be peer reviewed; articles that mainly investigates educational aspects of MOOCs, therefore, articles that investigates non-educational aspects of MOOCs such as MOOC software engineers are excluded; articles that show a well-defined goal, methodology, empirical results of the study and offers a substantial contribution to MOOC research

domain; articles with MOOC as a central topic; and articles from 2009 to 2018. In total, 4248 studies were retrieved from our initial search of the five databases, 1279 studies were selected on the basis of relevance, and finally we considered 311 studies based on the application of our inclusion and exclusion criteria, and the general viewpoints of the researchers of this study.

RESULTS

1. What are the research focuses in MOOC studies?
   From our selected 311 empirical MOOC studies, we categorized the general focuses of our MOOC studies into instructor-focused (n= 33), which mainly focused on MOOC instructors such as the challenges of teaching a MOOC course, teachers satisfaction, instructor teaching presence, etc. Student-focused (n =202) studies are studies that investigates students' topics such as dropout/retention/completion, self- regulation, collaborative learning, dishonesty/cheating, motivation to continue learning with MOOCs etc., MOOC pedagogical design-focused (n= 37) involves course design, pedagogical richness etc. Context/Impact (n = 28) involves studies that investigates issues such as effectiveness and flexibility in MOOCs. Other focus (n = 19) studies investigates topics such as MOOCs for disabled, MOOCs for elderly persons etc. Fig 1 below illustrates our selected study focuses

Fig 1: Research Focuses

2. What are the research topics in MOOC studies?

   From our knowledge of MOOCs, other e-learning domains such as blended learning and also inspiration from some influential MOOC studies such as (Zhu et al., 2018), we identified 17 main topics in empirical MOOCs. In addition, we categorized the infrequent MOOC research topics as 'others' totaling a number of 18 topics. The 'others' involves topics such as demographic distributions of MOOC

learners, professional development in MOOCs, underserved students, disabled learners, k-12 MOOC students, blended learning in MOOCs, technological competence in MOOCs etc. Fig 2 gives a representation of the research topics in MOOCs based on our 311 selected studies.

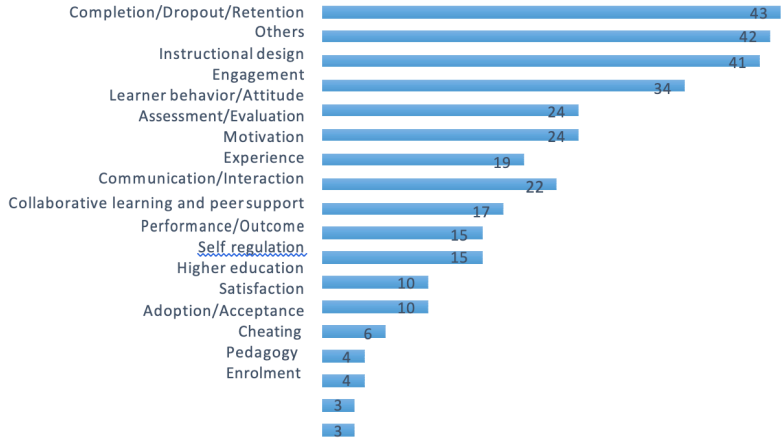


Fig 2: Research topics in MOOCs

WHAT IS THE OVERALL RESEARCH PRODUCTIVITY IN MOOCS?

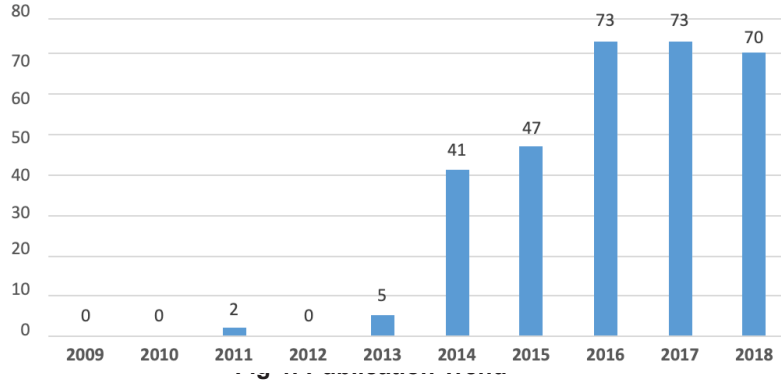
3.1 Publication channels

We categorized our studies based on publication avenue - Journal articles and conference papers. From our 311 selected studies, 173 (56%) consist journal articles, and 138 (44%) are conference papers.

Fig 3: Publication channel

3.2 Publication trend

Although, MOOCs offering of global free online education began in 2008, from fig 4, it is clear that MOOC research activities started significantly in 2013. 2014 and 2015 witnessed a rise in the number of published MOOC studies from five (5) relevant studies in 2013, to 41 publications in 2014 and reaching its peak in 2016 with 73 studies. Arguably, the sudden rise in the number of research publications in MOOCs happens because of the first two MOOC courses (Machine learning (ML) and Artificial intelligence (AI)) that Stanford University in the United States started in 2011 which attracts global attention and recognition and even led the New York Times Magazine declaring 2012 as 'The year of MOOC'. Also, the declaration of 2012 as the year of MOOC possibly restored assurance to the new promising instructional approach (MOOCs), thereby easing and motivating e-learning researchers to continue pursuing and investigating various dimensions of MOOCs. Furthermore, 2017 and 2018 have witnessed a fairly even quantity of publications of 73 and 70 in 2017 and 2018 respectively.



We plot a year-wise bubble-plot graph in order to provide a visualized summary of the topics, trends and the research gaps in MOOC over the years. Fig 5 below provides a fine grain summary of the research topics with respect to the years, as well as the gradual evolution of MOOC research over the years. As the year 2013 witnessed some progress in MOOC research activities compared to previous years, 2014 witnessed an even greater amount of MOOC publications with

41 publications compared to only five publications in 2013. Also, studies in 2014 began focusing on a number of emergent themes and issues in MOOCs such as learners' experience, engagement, behavior and other non-learner related aspects such as instructional design of MOOCs. In 2015, other research dimensions such as dropout (see (Sunar, White, Abdullah, & Davis, 2017)) of MOOC courses emerged, possibly due to learners' dropout rate. Fig 5 shows that research on dropout/completion (e.g. (Sunar et al., 2017)) have been on the rise since 2014. Completion rates have been embarrassingly low as the region of 10% is widely cited (Andres et al., 2018; Davis et al., 2017; García- Peñalvo, Fidalgo-Blanco, & Sein-Echaluce, 2018; Hone & El Said, 2016; Rai & Chunrao, 2016; Sharfina, Santoso, Isa, & Aji, 2017).

Additionally, the number of publications focusing on MOOC instructional design have doubled from three (3) studies in 2014 to six (6) studies in 2015, and the number has kept rising to 12 studies in 2016. However, the figures dropped to eight (8) in both 2017 and 2018. One possible explanation of this might be the quest for fully understanding the structure and design of MOOC instructions, as MOOC instructors are possibly novice in teaching MOOC courses to their respective learners. Other areas of research that have been fairly even across the years are 'satisfaction', 'self-regulation', 'learner behavior' and 'communication/interaction'. Although self-regulation has been ever present in technology-mediated modes of instruction (e.g. blended learning), MOOC researchers seem to be more interested in learners' dropout.

Another finding from Fig 5 is the decline in research on learners' motivation in MOOCs. One possibility is that motivation has less significant impact on MOOC learners as compared to dropout, engagement and instructional design. Other areas of research in MOOCs termed as 'others' involve topics such as learners study patterns, demographic distribution of MOOC learners, gender inequality etc. Fig 5 shows that the number of MOOC publications has been even and consistent on the less frequent MOOC topics.

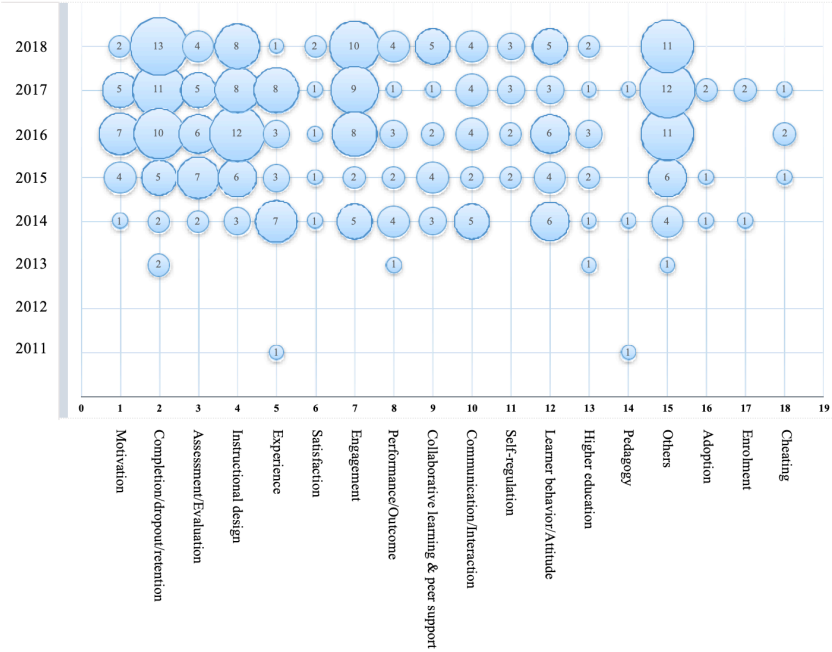


Fig 5: A bubble plot of year-wise empirical MOOC research topics

DISCUSSION

Our study offers a fine grain representation of the topics, focuses and overall research productivity of the empirical MOOC studies over the last decade. Although, it is very difficult to identify all the relevant MOOC studies due to our methodology of only considering the studies that are deemed as 'high impact'. Nevertheless, we are fully assertive that our selected studies provide a representation of the current state of MOOC empirical research in terms of research topics, focuses and overall productivity.

First, our study has found that MOOC research have focused more on issues of learner dropout. Even though, researchers have proposed various strategies, techniques and intervention approaches for reducing the problem of learners dropping out in MOOC courses, research on learner dropouts has not slowed down and has been on the constant high throughout the years. Arguably, many other related research themes such as learner engagement,

interaction and motivation to learn in MOOCs were also research topics directly/indirectly aiming at learners' completion/dropout issue. Our study has also found that MOOC researchers and practitioners have focused less on important research themes/issues such as learners' self- regulation. Although, students self-regulation in online environments has been an inherent problem that

hinders the effectiveness of various online learning mode of instructions (Rasheed, Kamsin, & Abdullah, 2019). In addition, other specific types of learners' self-regulation behavior in MOOCs were not researched such as procrastination. Though, procrastination is considered a psychological behavior (van Eerde & Klingsieck, 2018), that might be the possibility why the majority of the research activities on procrastination behavior comes from the medical and psychological domains. Therefore, future research should investigate the impact, level and causes of MOOC learners procrastination behavior and its effect on dropouts, satisfaction and overall performance. In addition, future research is warranted in fostering learners' self- regulation behavior through external scaffolds such as social identity groupings, personalization (e.g. see (Rahman & Abdullah, 2018)) etc. Research is also warranted to investigate the underlying issues of seclusion, boredom, anxiety that MOOC learners face.

In conclusion, our study has also identified research trends that would better equip and trigger MOOC researchers and practitioners in building upon their MOOC research through exploring the areas in which knowledge is as yet weak and inconclusive.

REFERENCES

Almatrafi, O., Johri, A., & Rangwala, H. (2018). Needle in a haystack: Identifying learner posts that require urgent response in MOOC discussion forums. Computers & Education, 118, 1-9.

Andres, J. M. L., Baker, R. S., Gašević, D., Siemens, G., Crossley, S. A., & Joksimović, S. (2018). Studying MOOC completion at scale using the MOOC replication framework. Paper presented at the Proceedings of the 8th International Conference on Learning Analytics and Knowledge

.

Cook, M. (2016). State of the MOOC 2016: A year of massive landscape change for massive open online courses. Online Course Report

Davis, D., Jivet, I., Kizilcec, R. F., Chen, G., Hauff, C., & Houben, G.-J. (2017). Follow the successful crowd: raising MOOC completion rates through social comparison at scale. Paper presented at the Proceedings of the seventh international learning analytics & knowledge conference

.

García-Peñalvo, F. J., Fidalgo-Blanco, Á., & Sein-Echaluce, M. L. (2018). An adaptive hybrid MOOC model: Disrupting the MOOC concept in higher education. Telematics and Informatics, 35(4), 1018-1030.

Hone, K. S., & El Said, G. R. (2016). Exploring the factors affecting MOOC retention: A survey study.

Computers & Education, 98, 157-168.

King, C., Robinson, A., & Vickers, J. (2014). Online education: Targeted MOOC captivates students. Nature, 505(7481), 26.

Lee, D., Watson, S. L., & Watson, W. R. (2019). Systematic literature review on self-regulated learning in massive open online courses. Australasian Journal of Educational Technology, 35(1).

Liyanagunawardena, T. R., Adams, A. A., & Williams, S. A. (2013). MOOCs: A systematic study of the published literature 2008-2012. The International Review of Research in Open and Distributed Learning, 14(3), 202-227

Pappano, L. (2012). The Year of the MOOC. The New York Times, 2 (12), 2012.

Rahman, M. M., & Abdullah, N. A. (2018). A Personalized Group-Based Recommendation Approach for Web Search in E-Learning. IEEE Access, 6, 34166-34178.

Rai, L., & Chunrao, D. (2016). Influencing factors of success and failure in MOOC and general analysis of learner behavior. International Journal of Information and Education Technology, 6(4), 262.

Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2019). Challenges in the online component of blended learning: A systematic review. Computers & Education, 103701.

Sharfina, Z., Santoso, H. B., Isa, R. Y. K., & Aji, R. F. (2017). Evaluation and Improvement of Indonesian Massive Open Online Course (MOOC) Interaction Design of MOOC X. Paper presented at the 2017 7th World Engineering Education Forum (WEEF).

Shi, Y., Li, X., Haller, A., & Campbell, J. (2018). Knowledge pricing structures on MOOC platform-A use case analysis on edX. Paper presented at the Twenty-second Pacific Asia Conference on Information Systems, Japan.

Sunar, A. S., Abdullah, N. A., White, S., & Davis, H. (2015). Personalisation in MOOCs: A critical literature review. Paper presented at the International Conference on Computer Supported Education.

Sunar, A. S., White, S., Abdullah, N. A., & Davis, H. C. (2017). How learners' interactions sustain engagement: a MOOC case study. Ieee Transactions on Learning Technologies, 10(4), 475-487. van Eerde,

W., & Klingsieck, K. B. (2018). Overcoming procrastination? A meta-analysis of intervention studies. Educational Research Review.

Veletsianos, G., & Shepherdson, P. (2016). A systematic analysis and synthesis of the empirical MOOC literature published in 2013–2015. The International Review of Research in Open and Distributed Learning, 17(2).

Zhu, M., Sari, A., & Lee, M. M. (2018). A systematic review of research methods and topics of the empirical MOOC literature (2014–2016). The Internet and Higher Education, 37, 31-39.

Students' and Lecturers' Perception Towards Student-Centred Learning Method: The 4-Pit Stop 6-Motion Technique

Maslinawati Mohammad, Intan Waheedah Othman
Raja Nurul Afiah Raja Abdullah, Hairul Suhaimi Nahar

Senior Lecturer, Faculty of Accountancy, Universiti Teknologi MARA (UiTM) Puncak Alam,Selangor, Malaysia
(waheedah87@uitm.edu.my)
Faculty of Accountancy, Universiti Teknologi MARA (UiTM) Puncak Alam, Selangor, Malaysia
&
Assistant Professor, Department of Accounting, College of Economics and Political Science, Sultan Qaboos University, Sultanate of Oman.

Abstract: Prior research on culture suggests that people are culturally heterogeneous. The culture heterogeneity is based on the varying region, religion, gender, generation and class. The extant literature has established four cultural dimensions which differentiate national culture values into power distance, masculinity versus femininity, individualism versus collectivism, and uncertainty avoidance2. From the perspective of the Malaysian races, the first two value dimensions i.e. power distance and masculinity versus femininity and define Malay cultural values as feminine (such as discretion and modesty) and high power distance. These effectively create unique personality traits among the Malay students in the educational setting which are shyness and introversion, as well as relatively wide social gap between teachers and learners. Accordingly, this necessitates the conventional teaching method to be less effective for Malay learners as learning styles has been identified in the literature to be culturally driven. Against this theoretical conjecture, we develop an alternative, non–conventional teaching method termed the "4-pitstop and 6-motion technique" (4P6M) which aims at removing students' shyness by creating a relaxed learning environment whilst eliminating the power distance by letting students to teach their friends under the teacher's oversight. Applying this revolutionized teaching and learning techniques to a relatively new and difficult course of Corporate Financial Strategy and Financial Strategy subjects offered at the Faculty of Accountancy, Universiti Teknologi MARA,

for postgraduate students, this novice teaching technique is expected to enhance the learning environment and hence, academic outcome in terms of improved students' performance. We interviewed 28 students and two lecturers on their perception on the effectiveness of the 4P6M technique.

Keywords: *postgraduate students, student-centred learning, Malay students, non-conventional teaching*

1 Correspondence details: waheedah87@uitm.edu.my , Faculty of Accountancy, Universiti Teknologi MARA (UiTM) Puncak Alam, Selangor, Malaysia 03-3258 7495.

2 In masculine societies, the traditional masculine social values permeate the whole society (e.g. the importance of showing off, of performing, of achieving something visible). In more feminine societies, the dominant values-for both men and women-are those more traditionally associated with the feminine role. Individualism versus collectivism relates to the relation between an individual and his or her fellow individuals (i.e. very loose or very tight). For uncertainty avoidance, the fundamental issue is how society deals with the fact that time runs only one way; that avoidance is, we are all caught in the reality of past, present and future, and we have to live with uncertainty because the future is unknown and always will be. Finally, power distance relates to how society deals with the fact that people are unequal.

INTRODUCTION

Motivated by the different ethnicities in Malaysia, it is the objective of this study to investigate the degree to which the Malay ethnic and cultural values have effects on teaching and learning. Specifically, a unique teaching method is developed in this study, known as "4 Pit Stops 6 Motions". This teaching method is introduced to assist students to gain a better understanding of the Finance subject. In applying the student-centred learning framework, the "4 Pit Stops 6 Motions" method essentially promote students to assume increased ownership, participate in higher-order thinking activities, in addition to articulating and presenting an artefact. More specifically, the "4 Pit Stops 6 Motions" technique involves a few stages of preparation before students can present a topic in class. Initially, students will be divided into four small groups. Within each group, students should be able to explain the topic assigned to them within 15 minutes. To innovate and implement an alternative teaching/learning technique for theory-based topics that

overcomes the barrier to the full extent of knowledge transfer between teachers and learners attributable to Asian students' personality traits and learning culture.

STUDENTS-CENTRED LEARNING

Student-centred learning (SCL) is an approach by which students create their own learning opportunities and rebuild knowledge in a dynamic way within an open-ended learning environment (Hannafin et al. 2014). This would mean that students undertake high responsibility and autonomy in their learning process (Lee & Hannafin, 2016). The learning process in the SCL environment requires that students are completely supported from many different angles including cognitive, social and motivational aspects. Leaving students to learn alone independently without any external guidance may be ineffective. Rather, students need to be supported properly throughout the learning process. This would involve support from the very beginning of the process including owning the project, researching the project up to the stage of sharing the outcomes of the project (Lee & Hannafin, 2016). McCombs and Whisler (1997) further contend that student-centred approaches focused in supporting unique individuality of varying needs, interests, perspectives, capacities and background.

An optimal learning environment is suggested to be the interactive one. Creating an interactive learning session is not an easy task. This task is even more challenging for Asian lecturers for two main reasons i.e., (1) discretionary and modesty (Hofstede, 1984) are personality traits commonly ascribed to Asian students; and (2) anecdotal evidence suggests a relatively high power distance between lecturers and learners in the Asian learning culture.

We innovate a student-centred learning technique called "4 Pit Stops 6 Motions". This technique has multiple advantages. The teacher can easily and quickly assess if students have really mastered the material (and plan to dedicate more time to it, if necessary during the preparation process or during the presentation day). By applying this method, the teacher can understand the subject matter more by engaging the students' participations- this is true for new teachers. This method involves the process of encouraging students

to read and understand the materials—often students do not actually learn the material until asked to make use of it in assessments. This method further increases the level of students' mastery of the topics. Furthermore, it enhances students' confidence and communication skills. Finally, the very nature way of learning drives interactivity and brings several benefits. Students are revived from their passivity of merely listening to a traditional way of lecturing and instead become attentive and engaged, two prerequisites for effective learning (see e.g., Angelo & Cross, 1993; Alison & Marwitz, 2001; Mel, 1996; Arthur, 2005 and Ryan, 2005).

This method is focusing on student action. This method deepens teachers' learning by not having a teacher/ teacher-centred lessons, but by deepening students' understanding through explaining the subject matter by creating or finding ways to show their understanding and what their actually can do to make their friends understand better. The key in quality station rotation or pit stops is building student metacognition3 through goal-setting, as well as teacher engaging with students around their goals and encouraging deeper learning in small groups (see e.g., Livingston, 2003 and Kim, 2014).

This method is perceived to encourage teachers to spend more of their time on the higher order levels of thinking in Bloom's Taxonomy rather than focusing on communicating or delivering the subject matter. It may be, for instance, that students are practicing and gaining fluency in communication and presentation skills, while they are memorizing their knowledge.

MECHANICS OF THE 4-PITSTOP AND 6-MOTION TECHNIQUE

There are two (2) phases in implementing this method, as indicated in Table 1 below. In phase 1, students are divided into 4 different groups and each group will be allocated with a different sub- topic. Students will do further reading, group discussion and preparation of short notes based on the sub-topic given. The completed notes will be then submitted to the teacher for initial review in order to ensure that the contents covered are in line with the syllabus. Following this, students will prepare the final notes which will be distributed to all students in class. There are 2 types of notes, i.e. (i) handouts – generally distributed, and (ii) Mahjong paper (34" x 34") – pasted on the

wall/4-pitstops. In phase 2, the real presentation takes place. The teacher will monitor students' presentation and set the timing. Each group will be the teacher at their own pit stop and become the learners at the other pit stops. The novelty of this technique lies in this latest step; (i) it removes the students' shyness by creating a relaxed learning environment, and (ii) eliminates the power distance by letting students to teach their friends under teacher's oversight. Each group will repeat the presentation 3 times to 3 different groups of learners. In total, there will be 6 movements represented by the 6 motions as summarized in Figure 1. Finally, in the last 10 minutes of the session, the teacher will do the wrap up of the topic. The summary of the stages is tabulated in Table 1.

RESEARCH METHODOLOGY

We conduct interviews among masters by coursework at the Faculty of Accountancy, Universiti Teknologi MARA, Malaysia. We interviewed 28 students from two Finance classes i.e., Corporate Financial Strategy and Financial Strategy we the 4P6M technique has been implemented in both classes. We analysed the findings from the interview sessions and discussed few similar themes from the transcribed interview sessions. We apply qualitative method in analysing the interviews and observations. A qualitative approach is used to analyse the interviews with the students and observations from the teaching lecturer. The lecturers interpreted the active learning in their classes based on their understanding of the 4P6M method.

3 "Metacognition" is often simply defined as "thinking about thinking." According to Livingston (2003), there are several terms currently used to describe the same basic phenomenon (e.g., self-regulation, executive control), or an aspect of that phenomenon (e.g., meta-memory), and these terms are often used interchangeably in the literature.

Table 1
The different phases of the 4-pit stop 6-motions teaching approach

	DESCRIPTION
PHASE 1	
Stage 1	Group Formation (4 groups – 4-pit stop)
Stage 2	Sub-topic Allocation
Stage 3	Reading and preparation of short notes
Stage 4	Submission for initial review
Stage 5	Correction and preparation of final notes for presentation
PHASE 2	• Presentation of maximum to 10-15 minutes in a small group. There will be 2 concurrent presentation sessions. • Lecturer monitors presentation and timing • Each group repeat the same 6 times • Lecturer wraps up the whole topic in the last 10 minutes of the class

Figure 1 below shows the mechanics of the 4-pit stop and 6 motions teaching technique.

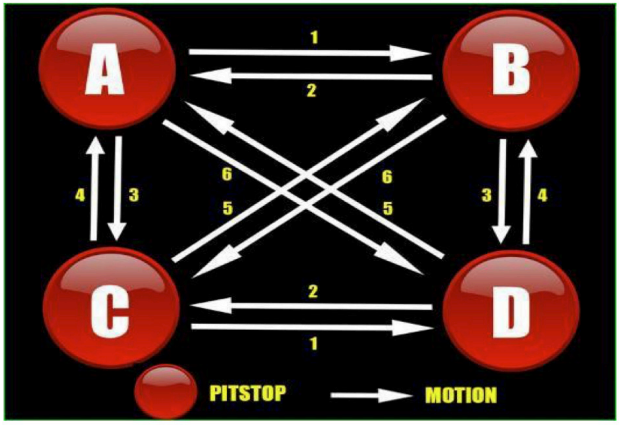


Figure 1: Mechanics of the 4-pit stop and 6-motion technique

STUDENTS' PERCEPTION TOWARDS 4-PITSTOP AND 6-MOTION TECHNIQUE

Students find it to be more effective as it involves face-to-face teaching and learning process. It is a two-way communication between the students and the lecturer. Students find it to be more effective as they can generate more ideas and solutions to any issues. The 4P6M is a method that allows students to engage actively in teaching and learning processes. As students need to explain the same concept to other groups three times, they become more confident and can see that the way they explain to other groups become much clearer and better after each pit stop. Furthermore, it is effective since it requires students to share and have discussions between small groups that are more likely to have the same level of thinking. This actually derived from the absent of the power distance between students. They tend to explain the topic based on their capability to understand the topic effectively.

Based on the interviews conducted, it is clear that this method is not only fun and interactive but also enhanced students' confidence. As one participant quoted as saying as follows:

> *I am more focused and it is much more comfortable to ask questions to the presenters. It is much more effective for me as compared to the normal presentation where all groups present in front of the class.*

There are four styles of learners based on VARK (visual, aural/auditory, read/write, and kinesthetic) approach for assessing preferred learning styles among students (Fleming, 2001). It may be effective for some as there are many types of learners. It may help especially those who are visual or kinesthetic (since they are the ones preparing for it). By applying this method in class, students will try their very best to understand their parts before they presenting to other students. The technique is very effective since students need to master the assigned topic before they can present to others.

One participant claimed that it is great to have this approach from time to time as it is different from the typical 'sit and listen' class approach.

> *I'd be looking forward to have this experience and would treat it as a 'small project' during that semester. But I'm not sure how effective this method if it is done every week. At present, it is still not the norm*

here in Malaysia (my personal opinion). It may work well in future hopefully if this is done earlier starting from kinde.

Students also find it easy to understand certain topics. For certain topics, students claim that they still require explanation from the lecturer to confirm the facts and knowledge. The only drawback is that, if students do not really understand their parts, they might explain the wrong concept to other students.

4.1 Comparison between 4P6M and the traditional method of teaching

Students perceived the method of 4P6M as more enjoyable and they can pay attention in the discussion. There will be no more "Syok Sendiri" presentation and no more sleeping audiences. They perceived that the method is different in the way the class is being conducted and the way students can exchange ideas. One participant mentioned that this 4P6M method allows two-way communication between the presenters and listeners. Everyone is free to ask questions and the class is being conducted informally that students feel free to ask questions. Furthermore, everyone is able to present their own parts and has the opportunity to participate in the discussion. One respondent responded as follows:

You are free and confident to give your opinion or idea plus it helps on your communication skills a lot.

Respondents claimed that this method is interesting as compared to the traditional presentation which respondents are easily get bored and feel it is too formal. As being mentioned in one interviewed as follows:

Interesting! Traditional presentation is boring and too formal, we should chill out.

LECTURERS' PERCEPTION TOWARDS 4-PITSTOP AND 6-MOTION TECHNIQUE

From the lecturers' observation, the class discussions become more meaningful as students are free to ask questions and participate in the discussion and can stop the presenters at any point of time when they do not understand certain explanation. The stress and the burden now become lesser as the

lecturer can allocate more time in enhancing knowledge while listening to students' presentations. Lecturers and get ideas by listening and involved in discussion at any point. Furthermore, lecturers can highlight any important points and corrects students at any points during the presentations. This method is suitable for lecturers that can be considered as juniors as they can get more ideas by listening to the various ways of students' explanation to the same concept of their teaching.

CONCLUSION

The traditional teaching method of teacher-centric has its own limitations, which mainly lacks bilateral interactions between teachers and students and creates low student interest in learning sessions. The 4-pit stops 6-motions teaching approach is an innovative way that consistent with the definition by Hofstede as having a culture of high feminism and high power distance that could effectively deal with the Malay students in general, as shy and introverted. This contemporary teaching approach helps not only that students enjoy the learning process but it helps to improve students' understanding and communication skills effectively, whereby overcome the drawback of the traditional teaching method. This technique is considered "fun and enjoyable'', yet it is more effective than traditional lectures that enabling student learning process. The 4-pit stops 6-motions teaching method is an intellectually stimulating, lively and perceptive learning sessions. There will no more boring lecture and sleepy heads. Everyone stands and moves!

ACKNOWLEDGEMENTS

Support given by the Faculty of Accountancy, UiTM and the Research Management Institute (RMI), UiTM through the LESTARI Grant award is greatly appreciated.

REFERENCES

Alison Morrison-Shetlar & Mary Marwitz (2001), Teaching Creatively: Ideas in Action. Outernet: Eden Prairie.

Angelo, T. A., and KP Cross. 1993. Classroom assessment techniques: A handbook for college teachers. San Francisco: JosseyBass.

Fleming, N. D. (2001). Teaching and learning styles: VARK strategies. IGI global.

Hannafin, M. J., Hill, J. R., Land, S. M., & Lee, E. (2014). Student-centered, open learning environments: Research, theory, and practice. In Handbook of research on educational communications and technology (pp. 641-651). Springer, New York, NY.

Thomas A. Angelo & Patricia Cross (1993), Classroom Assessment Techniques. 2nd Edition. Jossey- Bass: San Francisco.

Lee, E., & Hannafin, M. J. (2016). A design framework for enhancing engagement in student-centered learning: Own it, learn it, and share it. Educational technology research and development, 64(4), 707-734.

Livingston, J. A. (2003). Metacognition: An Overview.

Silberman, Mel. (1996). Active Learning: 101 Strategies to Teach Any Subject. Allyn and Bacon: Boston.

VanGundy, Arthur (2005). 101 Activities for Teaching Creativity and Problem Solving. Pfeiffer: San Francisco.

Watkins, Ryan (2005). 75 e-Learning Activities: Making Online Learning Interactive. San Francisco: Pfeiffer.

Schmeck, R. R. (1988). An introduction to strategies and styles of learning. In Learning strategies and learning styles (pp. 3-19). Springer US.

Kim, Anthony. (2014). Rotation Models Work for Any Classroom.

Hofstede, G. (1984). The cultural relativity of the quality of life concept. Academy of Management Review, 9(3), 389-398.

Whisler, B. L. M. J. S. (1997). The learner-centered classroom and school. San Francisco: Jossey Bass Publishers.

Perception, Motivation and Performance of Students in Food Preservation Technology Course Through Game-Based and Gamification Approach

Nurul Asyikin Md Zaki, Atikah Kadri

Faculty of Chemical Engineering, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia asyikin6760@uitm.edu.my
**Corresponding Author*

Abstract: Interactive learning that involves students participation and cooperation has been reported to help develop creativity, problem-solving and critical thinking skills, which are among top ten skills needed in 2020. The incorporation of game-based and gamification in teaching and learning is an interesting approach to enhance students learning abilities and skills acquisition through fun and immersive learning experience. This study aims to examine the implications of game-based and gamification of learning towards students perception, motivation and performance in engineering students particularly for those who attended the Food Preservation Technology course. Positive improvements were seen through the implementation of the game-based and gamification of learning. Findings show that game-based and gamification prepared students with better grasp and retention of knowledge, hence they achieved better grades at the end of the semester compared to students that involved in traditional classroom teaching method. Game-based and gamification can add variety and change of pace to classes subsequently developed interest in both students and instructors towards the course.

Keywords: *Classroom Approach, Engineering Education, Game-Based Learning, Gamification, Skills Enhancement*

NTRODUCTION

Traditional lecture-based teaching where teachers transfer knowledge to students is a one way communication in classroom approach. In traditional teaching approaches, students are forced to learn and acquire information during class session. Thus, this might trigger boredom for some students due to the variety of the students' learning pace. Fully understanding information and applying knowledge in new situations or in assignments are more difficult. In these situations, the presence of a teacher is crucial, because teachers can support critical thinking and show students how to solve problems (Anderson et al., 2001).

Interactive learning that involves students actively and cooperatively has been reported to help develop creativity, problem-solving and critical thinking skills, which are among top ten skills needed in 2020. The incorporation of game-based and gamification in teaching and learning is an interesting approach to enhance students learning abilities and skills acquisition through fun and immersive learning experience. Positive improvements in students motivation, engagement and performance in the Chemical Engineering courses may also be developed through the implementation of the gamification of learning. Game-based and gamification can add variety and change of pace to classes and make the course more interesting for both students and instructors.

In the alternative classroom model where game-based and gamification are introduced, students acquire foundational knowledge prior to face-to-face classroom through watching videos or web-lectures and reading books (Bouwmeester et al., 2016), before deepening and applying this knowledge during in-class gamification module such as analyzing case studies and undertaking collaborative group work (Bouwmeester et al, 2019).

1.1 Effects of game-based and gamification in learning

Games have been shown to be effective in promoting learning (Annetta, Minogue, Holmes, & Cheng, 2009; Barab et al., 2005; Ke, 2008; de Freitas, 2010; Liu et al., 2014; Papastergiou, 2009), and are more motivational for students than non-gaming teaching methods (Barab et al., 2005; Papastergiou, 2009). Games have been shown to

be effective for learning "partly because learning takes place within a meaningful context"

(Van Eck, 2006), which allows for application and practice. Effective games must be "motivating, addictive, and provide encouragement through very short-term goals, so that the player can fail and try again until they succeed.

1.2 The role of student motivation

Gamification's impact on student motivation and performance is an important topic, as there has been increased interest in gamification (Hanus & Fox, 2015) at the college level. Many universities and colleges have shown interests to incorporate gamification into their curriculum to better reach mobile-savvy students and increase student engagement. Other than game-based learning, using gamification elements (e.g., goals, rules, and feedback systems) to engage students may have impact in improving their literacy skills.

1.3 Game-based and gamification activities

Gamification is related, but not identical, to the concept of game-based learning. Gamification is about the use of game design elements in a non-game context, while game-based learning refers to the use of actual games to acquire skills or knowledge. In game-based learning, the skills that are put to the test in the game correspond to the learning task (Gee, 2013), as is for instance the case in a game where medical students or personnel perform surgical procedures in a simulated environment (Kapp, 2012). Typically, gamification includes the incorporation of game elements such as points, leaderboards, and badges (Barata, Gama, Jorge & Goncalves, 2013; Mekler et al., 2013b), or avatars, three-dimensional environments, feedback, ranks, levels, competition, communication systems, and time pressures (Deterding et al., 2011).

1.4 Concerns regarding game-based and gamification in learning

Not all research reported a positive relationship between the

incorporation of game-based and gamification in learning and student motivation and performance. A small percentage (10%) of studies reported no impact or negative impacts on student motivation (Berkling & Thomas, 2013; Hanus & Fox, 2015). Additionally, some studies reported mixed results with respect to motivation (Dominguez et al., 2013; Haaranen et al., 2014; Meyer, 2008). Meyer (2008) indicated that students reported that gamification did not affect their motivation to post or quality of post in a discussion forum; however, a small percentage (15%) of students did report a positive impact as a result of the introduction of point-based rewards. Similarly, Dominguez et al. (2013) reported that 31% of students found gamified environments motivating; however, 62% of learners reported that the traditional activities were more motivating.

The impact on learning and student performance was difficult to ascertain, as many studies did not report the effects on student performance. Of studies reporting results related to academic performance, the results are mixed. Barata et al. (2013) determined there was an increase in the number of students attaining the highest grades, as well as a decrease in the difference between the lowest and highest student grades. This is consistent with the findings of Mekler et al. (2013b), who found that gamification "significantly increased performance." Contrary to this finding, Hanus & Fox (2015) and de-Marcos et al. (2014) found that learners who participated in the gamified environment had lower exam scores, while Goehle (2013) found little evidence of impact either positive or negative on student performance.

1.5 Present study

The purpose of the current study is (1) to design the class activities incorporated with game-based and gamification, (2) to study the motivation of engineering student on game-based and gamification activities for learning, and (3) to determine the performance and retention of knowledge in game-based and gamification learning, all in comparison with traditional lecture-based education. We hypothesized that the engineering students participating in the Food Preservation Technology course of Universiti Teknologi MARA, Shah Alam,

Malaysia, were motivated and more engaged during game-based and gamification approach in classroom and online platform. The introduction of game-based and gamification in learning may also result in more in-depth discussions with peers and instructors during classroom sessions. As students are able to discuss on a more

advanced level, and provide more input during classroom discussions, students with game-based and gamification approach may equip themselves with higher soft skills and achieve higher grades. Moreover, since students are actively challenged to apply their knowledge during classroom sessions, it is also assumed that this knowledge will retain better, meaning that they may perform better on cognitively complex questions during the retention exam (Bouwmeester et al, 2019).

METHODS

2.1 Educational setting

This study was conducted in a Food Preservation Technology course, during two consecutive semesters. The course is an elective course as part of a 4-year Chemical Engineering program. The course was planned as a blended learning, amounting to 70 h per semester. In September 2018 – January 2019, the course was given in a traditional lecture-based design, where that students could attend lectures to acquire new knowledge. Some lessons were taught using online Learning Management System (LMS) via UiTM i-Learn, but still in a traditional lecture-based where slides and notes were provided and group discussion were done upon in online forum.

In March – July 2019, this course was mostly taught using the incorporation of game-based and gamification of learning. Students were asked to prepare before face-to-face classroom sessions, in particular by watching recorded videos and lectures, and reading text in the online LMS. The acquired knowledge was pre- requisite to participate actively during game-based and gamification class sessions in which assignments were to be solved particularly by involving themselves in games.

2.2 Participants

In March 2019, 33 students participated in this study. Students were on average 23.6 years old, and 51.5% were male. In September 2018, 36 students participated in this study. These students were 21.9 years of age, and 36.2% were male. The researchers did not retrieve any information about ethnicity or disability status of the students. Participation was voluntary and no incentives were given.

2.3 Data collection

During the course (September – December 2018 and March – June 2019), in-class observations were performed and students were invited to report their perception in a questionnaire survey. At the end of semester (July 2019), students indicated their perceived self-efficacy, a measure for competence, and filled out the anonymous course evaluation.

2.3.1 Perception and motivation of students

A questionnaire survey was given to the participants at the end of semester on their perception of game-based and gamification approach, and motivation on type of teaching methods used for classroom session. The teaching methods/activities include traditional lecture, group discussion, short quiz, student presentation, games, activity using technology, problem solving, research and guest lectures. Students were also asked to give comments on their perception of game-based and gamification for learning.

2.3.2 Performance of students

The performance of students was analysed based on these data:

1) Comparison of marks between Test 1 (game-based and gamification approach) and Test 2 (traditional lecture) for cohort September 2018.

2) Comparison of grade between cohort Sept 2018 and March 2019.

3) Comparison of perception vs performance on game-based and gamification in learning.

RESULTS AND DISCUSSION

3.1 Student perceptions and motivation of game-based and gamification in learning

Fig. 1 shows the motivation on type of teaching methods and learning activities for student from cohort September 2018 and March 2019. It can be seen that game-based and gamification approach gained the highest preference, 94.3% and 76.5% for cohort September 2018 and March 2019, respectively. The second highest preference was activity using technology which was not surprising as this mobile-savvy generation engaged with their gadgets most of the time. Not more than 30% were motivated by traditional lecture approach in classroom setting for both cohorts.

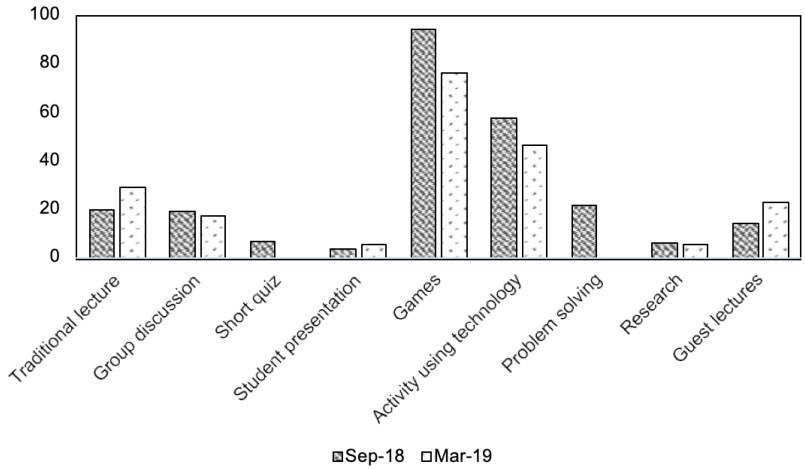


Fig. 1 Students preference on learning activities for cohort Sept 2018 and March 2019

3.2 Student performance in game-based/gamification compared to traditional lecture

Table 1 shows the median, average, minimum and maximum marks of Test 1 and Test 2 for students from cohort September 2018. Test 1 was done based on topics that were taught using the game-based and gamification approach, while Test 2 covered topics taught in traditional classroom lectures.

It was found that for all median, average, minimum and maximum data were higher for Test 1 (game- based approach) compared to Test 2 (traditional lecture). This shows that students performance were significantly influenced by teaching approach and game-based teaching model resulted in better marks for students.

Table 1. Comparison of Test 1 (game-based approach) and Test 2 (traditional lecture) marks for cohort Sept 2018

	Test 1	Test 2
Median	10.50	8.00
Average	10.53	8.57
Min	6.00	5.00
Max	14.25	14.00

Fig. 2 shows the percentage of students with their grades at the end of semester for cohort September 2018 and March 2019. Clearly, no student achieved the A grade for cohort September 2018 where there was traditional classroom teaching involved. It could be because the retention of knowledge was reduced because of the mix mode of teaching model. Meanwhile for cohort March 2019, around 24% of total students achieved the A grade and another 33% attained the A- grade. Both cohort shows around the same percentage (36%) for B grade.

This findings show that game-based and gamification prepared students with better grasp and retention of knowledge, hence they achieved better grades at the end of the semester compared to students that involved in traditional classroom teaching method.

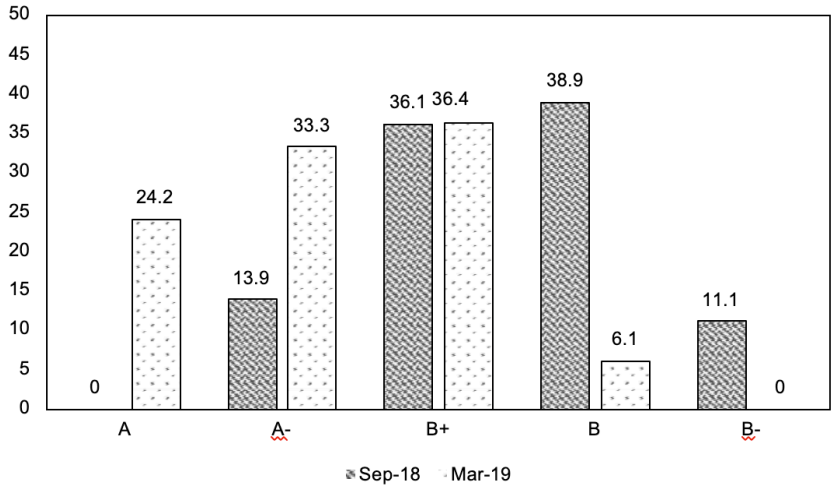


Fig. 2 Percentage of students according to grades for cohort Sept 2018 and March 2019

CONCLUSION

Game-based and gamification can add variety and change of pace to classes and make the course more interesting for both students and instructors.
In terms of practical implications, educators who are about to implement the game-based and gamification approach should be well aware of the amount of time involved for both students and instructors. Students need to adapt their learning approach to benefit from the game-based and gamification model. It seems that this model has more obligations compared to conventional teaching approaches, as students need to be prepared for application of knowledge, either in the classroom or online platform. It is important that educators are able to stimulate students' self-motivation and engagement during the practical of game-based and gamification approach in classroom or online platform.

For instructors, it is known that preparation of out-of-class materials and getting acquainted with the interactive, and in-depth teaching method is time consuming (Moffett, 2015; Snowden, 2012). Once the learning materials are created, they can be re-used in other classes (Moffett, 2015; Wagner et al., 2013).

ACKNOWLEDGEMENTS

The authors gratefully acknowledged financial and technical support from Research Management Centre UiTM (ARAS 0025/2016) and Faculty of Chemical Engineering, UiTM Shah Alam.

REFERENCES

Anderson, T., L. Rourke, D.R. Garrison and W. Archer (2001). Assessing teaching presence in a computer conferencing context, Journal of Asynchronous Learning Networks 5 (2).

Bouwmeester, R.A.M., de Kleijn, R.A.M., van den Berg, I.E.T., ten Cate, O.T.J., van Rijen, H.V.M., Westerveld, H.E. (2016). How do medical students prepare for classroom?, Medical Science Educator, 26(1), 53-60. doi: 10.1007/s40670-015-0184-9

Bouwmeester, R.A.M., de Kleijn, R.A.M., van den Berg, I.E.T., ten Cate, O.T.J., van Rijen, H.V.M., Westerveld, H.E. (2019). Flipping the medical classroom: Effect on workload, interactivity, motivation and retention of knowledge. Computers & Education, 139, 118-128. doi: 10.1016/j.compedu.2019.05.002

Annetta, L.A., Minogue, J., Holmes, S.Y., Cheng, M.T. (2009). Investigating the impact of video games on high school students' engagement and learning about genetics. Computers & Education, 53(1), 74-85. doi: 10.1016/j.compedu.2008.12.020

Barab, S., Thomas, M., Dodge, T., Carteaux, R. & Tuzun, H. (2005). Making learning fun: Quest Atlantis, a game without guns. Educational Technology Research and Development, 53(1), 86-107. doi: 10.1007/BF02504859

De Freitas, S., & Conole Gráinne. (2010). The influence of pervasive and integrative tools on learners' experiences and expectations of study. In R. Sharpe, H. Beetham, & S. De Freitas (Eds.), Rethinking learning for a digital age: How learners are shaping their own experiences. New York: Routledge.

Ke, F. (2008). Computer games application within alternative classroom goal structures: Cognitive, metacognitive, and affective evaluation. Education Technology Research and Development, 56, 539-556. Doi:10.1007/s11423-008-9086-5

Liu, Y. (2014). Teacher Designed Games: Leading Innovation in Classrooms. In M. Searson & M. Ochoa (Eds.), Proceedings of SITE 2014--Society for Information Technology & Teacher Education International Conference (pp. 665-669). Jacksonville, Florida, United States: Association for the Advancement of Computing in Education (AACE).

Papastergiou, M. (2009). Digital game-based learning in high school computer science education: Impact on educational effectiveness and student motivation. Computers & Education, 52(1), 1-12.

Van Eck, R. (2006). Digital game-based learning: It's not just the digital natives who are restless. EDUCAUSE Review, 41(2), 16-30.

The Application of Soft Skills Development Module Through the Preparation of Group Assignment of the UiTM Professional Islamic Education Courses, Based on the Leadership Approach

Hamdi Rahman Mohd Yaacob, Muhammad Yusri Yusof @ Salleh, Paiz Hassan, Amin Che Ahmat, Mohd Syukri Mohd Noor

Akademi Pengajian Islam Kontemporari, Universiti Teknologi MARA Cawangan Perak, Kampus Seri Iskandar, 32610, Bandar Baru Seri Iskandar, Perak, Malaysia
hamdi105@perak.uitm.edu.my, yusri613@perak.uitm.edu.my, paiz4186@perak.uitm.edu.my
Akademi Pengajian Islam Kontemporari, Universiti Teknologi MARA Cawangan Perak, Kampus Tapah, 35400 Tapah Road, Perak, Malaysia
amin132@perak.uitm.edu.my, syukri484@perak.uitm.edu.my
**Corresponding Author*

Abstract: Managing student group assignments as one of the assessment instruments with the need to ensure student soft skills development which were mapped to the course outcomes of a program of study, is one of the major challenges to the teaching and learning process. This is because of the using of cross-curricular approach where students are not trained specifically to those skills, but at the same time the development of the skills is evaluated. For the Islamic education professional courses offered to the UiTM diploma students, there are four soft skills to be developed through the preparation of group assignments namely: teamwork; information management and the lifelong learning skills; communication skills and professional ethics. The aim of this study is to propose an appropriate module that faculty can integrate into the teaching and learning process of the courses, to ensure that every student receives training before their soft skills are evaluated. The module reliability test was conducted by five lecturers on five groups of student from four different Islamic education professional courses. Feedback was obtained through the interviews with the lecturers involved and the review on the assignment meeting minutes submitted by the students. The findings from this study are suggested to be applied as a training module using guided meeting minutes as a mechanism

to develop soft skills and its assessment.

Keywords: *Continuous Assessment, Group assignment, Rubrics, Soft skills, Student development*

NTRODUCTION

One of the main reasons for graduates' failure to effectively market themselves in the job system is the lack of sufficient soft skills (Devadason et al, 2010). These weaknesses are found to be related to the weakness of the education system to produce graduates with necessary soft skills (Mourshed et al., 2014). In this regard, the development of soft skills has been recognized as one of the key solutions to the problem of unemployment among Malaysian graduates (Sulaiman & Burke, 2009). In Malaysia, the Ministry of Education Malaysia has set eight education domains in the Malaysian Qualifications Framework (MQF) for higher education, which consist of the aspects of knowledge; practical skills; social skills and responsibilities; values, attitudes and professionalism; communication, leadership and teamwork skills; problem solving and scientific skills; information management and lifelong learning skills; and management skills and entrepreneurship. Six from the eight domains mentioned above are related to soft skills. In Malaysia, studies have found that most student-level programs are carried out in the form of coursework which involves group assignments or projects, presentations and discussions (Jedin & Saad, 2006). This makes group learning as one of the most important educational instruments in the Malaysian higher education system to achieve the goal of developing such soft skills (Neo, 2005).

RESEARCH BACKGROUND

Group assignment is one of the methods of instruction based on teamwork. It involves the formation of a small, formal group of students, working together and contributing to the success of a mutual mission (Smith, 1996). According to Biggs and Tang (2009), this development refers to two main objectives, which are; the development of interpersonal skills and teamwork-related skills; while the second is to reduce the burden on teachers in the assessment process.

The Islamic education-related courses are among the compulsory courses for students pursuing diploma programs in Universiti Teknologi MARA. There are three courses related to Islamic education, including professional Islamic education courses offered to the third-year students.

The courses are mapped into four domains of soft skills, which are; 1) communication skills, 2) teamwork skills, 3) professional ethics & morals and 4) lifelong learning skills, which are implemented through the preparation of group assignment and presentation. Therefore, in conducting this course, in order to provide fair assessment to the students, the lecturers must ensure that students earn benefit from the developmental training of these four domains of soft skills before their soft skills are assessed (Tucker & Abbasi, 2016). The following Table 1 show the evaluation criteria and weighting of the assignment and the presentation of the professional Islamic education-related courses provided by the syllabus developer. However, as the development of these soft skills is cross-curricular, the development of these domains is not explicitly stated. This requires lecturers to use their own creativity to develop any form of adaptive training to ensure that students are not evaluated for anything they have not been trained on.

Table 1. Assessment criteria for UiTM professional Islamic education courses

No.	Items	Criteria	Marks
Workgroup assignment			
1	Introduction	Organized	2
2	Points and elaboration	Good facts & well-mapped elaboration to topic	15
3	Suggestion and conclusion	Well-described overall discussion	3
4	Authentic references	Sufficient and authorized references	2
5	Professional ethics and moral (Plagiarism)	Proactive and creative in completing work	3
Group Presentation			
1	Communication skill	Good and interesting performance	5
2	Teamwork skill	Committed to the group	5
3	Professional ethics and moral	Observing professional attitude and code of conduct	2
4	Lifelong learning	Ability to seek and open to learn new knowledge	3

RESEARCH QUESTION

The aim of this study is to propose an appropriate module that faculty can integrate into the teaching and learning process of the course, to ensure that every student receives training before their soft skills are evaluated. Accordingly, this study revolves around two main areas:

1- What is the appropriate form of module to train students' soft skills which is suitable to be applied during the preparation of course assignment for the professional Islamic education courses?
2- How reliable is the proposed module to meet the needs of the soft skills training involved?

SOFT SKILLS ATTRIBUTE

4.1 Information Management and Lifelong Learning Skills

According to Aspin (2011), for all this while the lifelong learning has been focusing on three essential needs, which are; the economic development, personal development and social inclusion. In the framework of enculturing the lifelong learning by the Ministry of Higher Education 2010-2020, the ministry defines the lifelong learning based on the definition given by Longworth & Davies (1996), which is referred as "the development of human potential through a continuously supportive process that stimulates and empowers individuals to acquire all the knowledge, values, skills and understanding they will require throughout their lifetimes and to apply these with confidence, creativity and enjoyment in all roles, circumstances and environments."(Ministry of Higher Education Malaysia, 2011). In the workplace climate, for example, continuous change in the job climate requires knowledge seeking and continuous skills development (Field, 2005). Lifelong learning refers to one's openness to new ideas, decisions, skills and behaviours that motivate one to acquire knowledge, process and transfer it using certain skills: 1) locate appropriate information, 2) evaluate its quality, 3) organize it, and 4) use that information effectively (Collins et al., 2009). With regard to the ability to test the source of information, Peterson (2015) proposes five criteria to test before a source of reference is accepted,

and they include;

1) authority of the author and the background of the publisher, 2) objectivity of the author, 3) quality of work, 4) currency of the work, and 5) relevancy of the work. Table 2 below shows the match between the assignment and presentation assessment criteria with the lifelong learning skills criteria from Collins et al. (2009) and Peterson (2015):

Table 2. Matching assignment and presentation assessment criteria with lifelong learning skills

No	Lifelong Learning Elements According to Collins et al.(2009) & Peterson (2015)	Assignment or Presentation Assessment Criteria	Rationalized Assessment Elements
1	Locate appropriate information	Using good facts & elaboration	Well answering the research questions
2	Organizing information effectively		Developing original structure of ideas
3	Relevant source of reference	Sufficient references	Sufficient data
4	Authority of the author and & background of the publisher	Trusted references	Trusted references
5	Using information effectively	Openness towards new ideas	Benefiting with new ideas
6	Currency of the work	Ability to seek new knowledge	Using current reference

4.2 Written Communication

Communication is a process that involves the transfer of knowledge and common understanding from one person to another (Keyton, 2011). It begins with the transmission of messages or information from the presenter either verbally or in writing to the recipient via a specific media followed by feedback from the recipient (Sulaiman, 1997). Iksan et al (2012) measured written communication skills from student assignment based on several criteria: 1) clarity of writing, 2) flow of argument, 3) easy-to- understand sentences and 4) academic writing. These criteria served to measure students' ability from their point of view as informants. Meanwhile, their skills as recipients were identified through their feedback on information or facts obtained from the references (Iksan et al, 2012). Table 3 below shows the match between the assignment and presentation assessment criteria with the communication skills criteria from Iksan et al (2012):

Table 3. Matching assignment and presentation assessment criteria with communication Skills

No	Communication Skills, Iksan et al (2012) & Sulaiman (1997)	Assignment or Presentation Assessment Criteria	Rationalized Assessment Elements
1	Giving feedback	Well-described conclusion of overall discussion	Well-described conclusion
2	Clarity of writing using easy-to-understand sentences	Well mapped facts & explainations to the topic of discussion	Using easy-to-understand sentences
3	Flow of arguments		Logical connection between sentences
4	Academic writing	Free plagiarism	Using citation

4.3 Professional Ethics

According to Devadason et al (2010), among the professional ethics that need to be applied in the development of student soft skills are; 1) time management, especially meeting the deadlines of submitting reports, 2) practicing honesty, trust and integrity, and 3) carrying out tasks professionally. In a professional organisation teamwork leadership is practiced through meetings. Meeting is functions to determine the vision and mission, plan strategies, make decisions, review enhancement or monitor, and so on. An effective implementation of meetings will create a diversity of formal communications within the organization, where tasks delegated among colleagues can be executed efficiently in order to achieve the mission and vision of the organization (Samsuni & Hadi, 2005; Kechot, 2015). Therefore, meetings become the nucleus of a teamwork.

According to Geimer et al. (2015), there are four main elements of meeting effectiveness, including the people (meeting members), meeting management, meeting activities and meeting outcomes. Meeting activities refer to discussions related to the purpose of the meeting. Whereas meeting results refer to decisions made during or after a meeting that will affect the out-of-meeting actions of performing task positively or vice versa

Physically, the results of the meeting are recorded in the form of minutes, the only outcome that can be referred to after the meeting

(Jennings, n.d.). It is a historical record of teamwork, as an evidence of the implementation and achievement of group objectives (Gutmann, 2016), which involves processes such as mission setting, strategy planning, task sharing, reporting and improvement. Thus, the success of a teamwork that involves the above process can be ascertained by the minutes of the meeting. Table 4 below shows the match between the assignment and presentation assessment criteria with Devadason et al (2010)'s professional ethics skills.

Table 4. Matching assignment and presentation assessment criteria with professional ethics

No	Professional Ethics, Devadason et al (2010)	Assignment or Presentation Assessment Criteria	Rationalized Assessment Elements
1	Punctual	Proactive and creative in completing tasks	Punctual
2	Trustworthy	Free plagiarism	Free plagiarism
3	Practicing professional management	Professional attitude and observe code of conduct	Practicing professional management code of conduct
4	Truthful and integrity		Using citation

4.4 Teamwork

One of the biggest challenges to develop soft skills is developing teamwork skills. This is because in addition to developing individual teamwork skills, it is also necessary to ensure the involvement of each student in the development of the other skills above, which are; the lifelong learning, written communication, and professional ethics. This is because the successful of team in submitting good report, does not totally reflecting significant teamwork (Huges and Jones, 2011). Therefore, the assignment report is not indicates that each member has undergone the development of all required soft skills. This requires that the aspects of teamwork skills development should be effectively develop to ensure the involvement and contribution of each member in the preparation of the assignments, so that all the required soft skills will also efectively trained. Thus, the task assigned to measure students teamwork skills should be specifically able to explain the development of teamwork elements to each team member (Walvoord & Anderson, 1998). According to Devadason et al (2010), the success of

teamwork depends on the degree of integration among group members, including 1) appropriate group size, 2) efficient task sharing, 3) good work coordination, and 4) participation of the members.

According to Tucker & Abbasi (2016), one of the weaknesses of developing teamwork skills among graduates is that they are not trained on how to work in a team and their skills are assessed simply by referring to the end result and disregard the preparation process. Studies show that students will be more positive about teamwork when they receive proper training and the assessment is carried out individually (Chapman and Auken, 2001). In line with teamwork as one of the desired course outcomes, students must first be given appropriate training before their achievement is evaluated (Bain, 2004). As teamwork refers to each member's involvement in the task preparation process, teamwork assessment can only be trusted by referring to the process and not to the final report (Huges and Jones, 2011). Accordingly, although the purpose of group assignments as an instructional method is to reduce the lecturers burden of individual scoring (Biggs & Tang, 2009), by referring to the process, will allows lecturers to identify which members who failed to make significant contributions towards the team. Accordingly, they can be assessed individually and to ensure fair scoring among group members (Hamdi Rahman et al, 2018). By identifying the contribution of each member in the preparation process, also helps lectures to determine level of involvement of each members of other soft skills development as well as to conduct individual assessment. At that time, lecture can simply refers to the final report. Table 5 below shows the match between the assignment and presentation assessment criteria with teamwork criteria from Devadason et al (2010):

Table 5. Matching assignment and presentation assessment criteria with teamwork skill

No	Teamwork, Devadason et al (2010)	Assignment or Presentation Assessment Criteria	Rationalized Assessment Elements
1	Participation of members	Commitment towards Group	Member's commitment
2	Balance task sharing	Good teamwork	Balance task sharing
3	Good work coordination		Good group coordination

RESEARCH METHODOLOGY

This group assignment management module was developed based on workgroup report and presentation assessment criteria as required by the courses syllabus. There are four stages of instructions including; 1) learning, 2) practicing, 3) getting feedback from lecturer, and 4) trying again (Bain, 2004; Fink, 2003) by using minutes of meeting as an instrument of teamwork leadership management and as an evident the execution of tasks given (Hamdi Rahman et al, 2018). In general, the contents of the module were divided into three main sections. First, the formation of groups and the selection of title. Second, the process of preparing report. Third, feedback and evaluation of the draft report.

In the first stage, students were asked to form groups of between 4 and 5 (David & Bass, 1993). In order to establish the element of democracy and to encourage communication in the early stage of task preparation, each group was asked to suggest an issue they would like to study based on the general

criteria given. It also aimed to foster positive attitudes toward teamwork by instilling the belief that they have more control over expected outcomes (Pfaff & Huddleston, 2003).

While the second part is the report preparation processes, which involved the achievement of 4 main objectives, which were; 1) to guide students to practice the right attitude in information management by referring to the authentic source of references, where each member asked to contribute two sources of reference to the group. Students were first trained to identify the credibility of the author and also the publisher based on the principles of narration of hadith in Islam; 2) to guide each student to practice trust and transparency in knowledge management through the writing of two paragraphs without plagiarism, based on the two sources of references. In this regard, students were trained first on the concept of trust in Islam and its relationship to plagiarism. In performing this task, students were required to write an essay of 50 words, by practicing American Psychological Association (APA) reference and citation writing style; 3) to guide each group to develop sub topics and distribute them to each group member and to guide them to write a 400-word essay based on previously acquired skills. Each member was required to cite each fact, but not to repeat the same citation continuously more than twice, and to make conclusion at the end

of the essay; 4) to guide coordination of each group to write introduction, suggestions and final conclusions and also to the abstract of the article. Meanwhile, the final stage refers to the stage of receiving feedback from the assessment of a draft report. Actually, feedbacks for improvement were given at the beginning of every following phases in the preparation. For the purpose of teamwork professional management, each group was equipped with eight templates of the minutes of meeting containing generic recommended meeting results as a guidance. For each phase, two templates of the meeting minutes were required. The first for the purpose of holding meetings prior to the execution to ensure that each member has a clear picture of the assignment and also to distribute tasks among members. The second is for the purpose of reporting, as well as to confirm the accuracy of the reported results with the tasks received. Meeting minutes were used to provide feedback for lectures on the preparation process and also to identify the commitments of each group member.

The module was conducted by five lecturers consisting of 138 students from five classes of the students from the third semester and divided into five groups per class. The main objective of the study was to obtain feedback on the application of the module in generating module outcomes which are the expected soft skills criteria that will be assessed from group assignment report and presentation.

Table 6 below show the details of the expected module deliverable outcome from the implementation of the module in the teaching and learning of the courses involved. The reliability and credibility of the module as a student's soft skills training instrument were measured by lecturers through the feedback on the attainment of module outcomes obtained during the discussion session conducted before every next phase of the processes, as well as through the assignment report.

FINDINGS AND DISCUSSION

Based on the initial feedback from the discussion session for every beginning of new phase of assignment preparation process, the review on the submitted meeting minutes and also the evaluation on the final report showed that, generally, most students have clearly indicated the attainment of expected module outcomes from the training. Students also have benefited from the initial feedback provided from the discussion and the monitoring of minutes of meeting in the improvement of their final report.

With regard to the lifelong learning skills, 92 percent of students were able to respond to the topic of the study accurately, 87 percent of students were able to contribute at least two references for the group while 84 percent were able to refer their entire writing using authentic sources. 100 percent of submitted assignment have at least one suggestion as an evidence of the ability of the students to use information effectively. However, 30 percent of students have cited the same reference more than twice continuously. This lack of ability to compile facts from multiple sources of reference may be due to moderate level of maturity of thinking, as well as the nature of developing talent and creativity preference need to be conducted in a long-term training. The study has obtained the same result for the ability to identify current information.

Table 6. Module deliverable outcomes

A. The lifelong learning skill			
No	Collins et al. (2009) & Peterson (2015)	Rationalized Assessment Elements	Deliverable Outcomes
A1	Locate appropriate information	Well answering the research questions	Every student has successfully answered the research questions.
A2	Organizing information effectively	Developing original structure of ideas	Every student not to repeat the same citation continuously more than twice
A3	Relevant source of reference	Sufficient data	Every student has successfully referred to at least 2 trusted references
A4	Authority of the author and & background of the publisher	Authorized references	Every student has successfully referred the entire writing to the trusted references.
A5	Using information effectively	Benefiting with new ideas	Every groups has successfully giving suggestions based on new information
A6	Currency of the work	Using current reference	Every student has successfully using references published within past 10 years
B. Written communication skill			
No	Iksan et al (2012) & Sulaiman (1997)	Rationalized Assessment Elements	Deliverable Outcomes
B1	Giving feedback	Well-described conclusion	Every student was able to draw conclusion based on the information presented.
B2	Clarity of writing using easy-to-understand sentences	Using easy-to-understand sentences	Every student has successfully conveyed facts using easy-to-understand sentences
B3	Flow of arguments	Logical connection between sentences	Every student has successfully used suitable conjunction
B4	Academic writing	Using citation	Every student stated the citation for every fact delivered.
C. Professional ethics			
No	Devadason et al (2010)	Rationalized Assessment Elements	Deliverable Outcomes
C1	Punctual	Punctual	Every group has submitted the assignment at the time given.
C2	Trustworthy	Free plagiarism	Every student managed to write using his own sentence
C3	Practicing professional management	Practicing professional management code of conduct	Every group has successfully managed group leadership using the meeting minutes
C4	Truthful and integrity	Using citation	Every student stated citations for every facts delivered
D. Teamwork skills			
No	Devadason et al (2010)	Rationalized Assessment Elements	Deliverable Outcomes
D1	Participation of members	Member's commitment	Every member of the group has significantly involved in the preparation of the assignment
D2	Balance task sharing	Balance task sharing	Every group has successfully delegated tasks among members fairly
D3	Good work coordination	Good group coordination	Every group has successfully coordinated the task preparation process

In term of the written communication skills, 90 percent of students were able to provide conclusion using their own perspectives from information obtained, meanwhile only 80 percent have stated citations for every fact

presented including the fact referred from the same source. However, 25 percent of the students continuously repeated citations from the same source more than twice. This included students who did not cite any fact when deriving information from the same source. The instructions not to continuously repeat citations from the same source more than twice aimed to train students not to copy the structure of the thinking from the source of the reference and to train them to come up with creative ideas in developing their own structure. Some students' weaknesses in communicating the facts using the conjunction effectively may be due to the weakness of language proficiency.

The results of the study also found that all groups used the meeting minutes provided. It was hoped that from the use of meeting minutes, each member of the team will have professional project management experience. One of the purposes of using the meeting minutes was to motivate students to meet the deadline and to avoid being recorded as not committed to the group. The findings show that 95 percent of group members have submitted their reports during the meeting of the final draft preparation report. Meanwhile, 85 per cent of students succeeded in writing using their own sentences, while the rest still practiced the 'cut & paste' culture even has been warned beforehand. This may be due the attitude of postponing work which finally led to insufficient time to prepare the report.

With regard to the teamwork, 100 percent of the groups have successfully engaged all members to perform the management tasks particularly as meeting secretary. However, this rate did not include the 5 percent of group members who refused to commit to the group. They were excluded from the group and given individual assignment.

CONCLUSION

Outstanding mastery of soft skills is an important asset for any graduate to cope with the changes brought by the industrial revolution 4.0 and the community 5.0. From the religious point of view, graduates need to have high management and lifelong learning skills to cope with the uncontrolled eruption of information especially to maintain a healthy mindset and faith. Recommendation for the next study is to identify the impact of module implementation on the development of students' soft skills and to explain the rubric of the assessment more objectively.

ACKNOWLEDGEMENT

We would like to thank Universiti Teknologi MARA for providing the research grant 600- IRMI/DANA 5/3/ARAS (0101/2016).

REFERENCES

Aspin, D. (2011). Lifelong learning: concepts, theories and values. http: www.leeds.ac.uk/educol/documents/00002564.doc

Bain, K. (2004). What the Best College Teachers Do. Cambridge: Harvard University Press.

Biggs, J. & Tang, C. (2009). Teaching for Quality Learning at University (3rd ed.). Maidenhead: Open University Press.

Chapman, K. J., & Auken, S. V. (2001). Creating positive group project experiences: an examination of the role of the instructor on students' perceptions of group projects. Journal of Marketing Education, 23(2), 117-127. doi: 10.1177/0273475301232005.

Collins, J. et al. (2009). Education Techniques for Lifelong Learning Lifelong, Learning in the 21st Century and Beyond. RadioGraphics. 29, 613–622 doi:10.1148/rg.292085179.

Davis, B.G. & Bass, D. (1993). Collaborative learning: group work and study teams. http://teaching.berkeley.edu/bgd/collaborative.html.

Devadason, E.S., Subramaniam, T. and Daniel, E.G.S. (2010). Final year undergraduates' perceptions of the integration of soft skills in the formal curriculum: a survey of Malaysian public universities. Asia Pacific Education Review. 11(3), 321-348.

Field, J. (2005) Social capital and lifelong learning. Bristol: The Policy Press.

Fink, L. D. (2003). Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses. San Francisco: Jossey-Bass.

Geimer, J. L., Leach, D. J., DeSimone, J. A., Rogelberg, S. G., & Warr, P. B. (2015). Meetings at Work: Perceived Effectiveness and Recommended Improvements. Journal of Business Research, 68, 2015–2026.

Gutmann, J. (2016). Taking minutes of meetings. London : Kogan Page.

Hamdi Rahman, M.Y., Mohd Sirajuddin, S. P. M. S., Muhammad Yusri, Y.S., et al. (2018). Development and Evaluation of Team Work Skills Through the Preparation of Group Assignment Coursework Using Meeting Minutes. The Journal of Social Sciences Research, Special Issue 6 (2018),1231-1238. doi:doi.org/10.32861/jssr.spi6.1231.1238.

Hughes, R. L. and Jones, S. K. (2011). Developing and Assessing College Student Teamwork Skills.

New Directions for Institutional Research. 149 (2011), 53 - 64. doi: 10.1002/ir.380.

Iksan Z.H., Zakaria, E., Meerah, T.S.M., et al. (2012). Communication skills among university students. Procedia Social and Behavioral Sciences. 59 (2012), 71 – 76. doi:10.1016/j.sbspro.2012.09.247.

Jedin, M. & Saad, N. (2006) A preliminary study on gender and learning style in Malaysian higher learning institutions: Evidence from a cultural perspective, in Critical Visions, Proceedings of the 29th HERDSA Annual Conference, Western Australia, 10-12 July 2006: pp 138-145.

Jennings, C. A. (n.d.) Meeting Minutes According to Robert's Rules. Retrieved from http://www.dummies.com/careers/business-skills/meeting-minutes-according-to-roberts-rules/

Kechot, A. S. (2015). Bentuk Komunikasi Dalam Menangani Peranan Kepimpinan Badan Bukan Kerajaan (NGO) Perfileman. Jurnal Komunikasi, Malaysian Journal of Communication, 31(2), 423–439.

Keyton, J. (2011). Communication and organizational culture: A key to understanding work experience.

Thousand Oaks : Sage.

Longworth, N & Dives, W.K. (1996). Lifelong learning: New vision, new implications, new roles for people, orginations, nations and communities in the 21st century. London: Kogan Page.

Ministry of Higher Education Malaysia (2011). Blueprint on enculturation of lifelong learning for Malaysia 2011-2020. Malaysia: Kementerian Pengajian Tinggi Malaysia.

Mourshed, M., Patel, J. and Suder, K. (2014). Education to employment: Getting Europe's youth into work. McKinsey and Company, New York, NY.

Neo, M. (2005). Engaging students in group-based co-operative learning - A Malaysian Perspective.

Educational Technology & Society, 8 (4), 220-232. www.ifets.info/journals/8_4/20.pdf Peterson, E. (2015). Critical Evaluation of Information Sources.
http://researchguides.uoregon.edu/gateway/evaluate-sources

Pfaff, E., & Huddleston, P. (2003). Does it matter if I hate teamwork? What impacts student attitudes toward teamwork. Journal of Marketing Education, 25(1), 37-45. doi:10.1177/0273475302250571

Samsuni, M.N., & Hadi, Z. A. (2005). Perancangan Strategik Organisasi Melalui Pelaksanaan Balanced Scorecard. Jurnal Pengurusan Awam, 4(1), 64–76.

Smith, K. A. (1996). Cooperative learning: making "groupwork" work. New Directions for Teaching and Learning, 67(1996), 71–82. doi:10.1002/tl.37219966709

Sulaiman, M. (1997). Media dan komunikasi dalam bahasa Melayu. Malaysia: Fajar Bakti.

Sulaiman, N. & Burke, M. (2009). A case analysis of knowledge sharing implementation and job searching in Malaysia. International Journal of Information Management, 29(4), 321-325 (2009). doi: 10.1016/j.ijinfomgt.2009.03.010.

Tucker, R. & Abbasi, N. (2016). Bad Attitudes: why design students dislike teamwork. Journal of Learning Design, 9 (1), 1-20. doi. 10.5204/jld.v9i1.227.

Walvoord, B. E., and Anderson, V. J. (1998). Effective Assessment: A Tool for Learning and Assessment. San Francisco: Jossey-Bass.

Utilizing the Linguistic Landscapes for Contextual Language Learning

Kamisah Ariffin*, Geraldine De Mello, Misyana Susanti Husin, Aini Andria Shirin Anuarudin & Nurhidayatul Shima Omar

**Academy of Language Studies, Universiti Teknologi MARA Cawangan Pahang*
26400 Bandar Tun Abdul Razak Jengka, Pahang, Malaysia
kamisah@uitm.edu.my
Academy of Language Studies, Universiti Teknologi MARA Cawangan Melaka
78000 Alor Gajah, Melaka, Malaysia
geraldine@uitm.edu.my, misyana@uitm.edu.my, shima_nsho@uitm.edu.my
Academy of Language Studies, Universiti Teknologi MARA Cawangan Selangor
**Corresponding Author*

Abstract: The usual contexts of language learning are mainly limited to the classroom. There is a challenge to connect the contents of classroom lessons to the world outside the classroom. This mini project explores the potential of using the linguistic landscapes as a learning space for contextual language learning. Its objectives are to find an approach that can supplement formal learning as well as to provide meaningful and continuous learning for the students. In this project, students were asked to apply what they learned in the classroom in the real world context. The findings suggest that linguistic landscapes can serve as an authentic source of learning materials that positively facilitate learning. The project supports a positive learning experience through learner immersion, engagement and motivation.

Keywords: *linguistic landscapes, language learning, contextual learning*

INTRODUCTION

The aim of teaching language is for students to acquire the language meaningfully so that they will be able to function and negotiate meaning in the real world. However, the usual contexts of learning are mainly limited to the classroom. There is a challenge to connect the contents of classroom lessons to the world outside the walls of the classroom. As put forward by Nation (2003), it is difficult to provide opportunities of exposure to language

and the practice of using it in the EFL (English as a Foreign Language) settings.

There have been many approaches to provide meaningful learning for students such as task-based learning or problem-based learning. Such approaches aim at promoting student learning of concepts and principles using the real-world situation or problems. However, such pseudonym real world situations raised a question – can teaching and learning through these task-based classroom activities satisfy the students' needs or what they encounter beyond the classroom? And how can real life situations be brought into teaching and learning?

Putting real learning situations in teaching can bring big opportunities for the students to improve. This is because exposure is one of the essential elements for the second language acquisition (Al-Zoubi, 2018). Thus, this paper suggests the potentials of bringing the real language in contact into learning. Specifically, it invites the language instructors to consider pedagogical potentials of the linguistic landscapes surrounding us, i.e the language used in public, for language learning.

LINGUISTIC LANDSCAPES FOR LANGUAGE LEARNING

The concept of Linguistic Landscapes (LL) relates to the use of language in its written form in the public sphere. It is visible to all in that particular area. Landry and Bourhis (1997) defines LL as 'the language of public road signs, advertising boards, street names, place names, commercial shop signs, and publis signs on government buildings' (p.25). More recent studies have broadened the concept to include images, sounds, drawing and movement (Shohamy, 2011). These include advertisement flyers, advertisement on moving vehicles and tourist maps. The LL is a manifestation of the language use of the community in that area. It can inform about the sociolinguistic composition of the area and language(s) used for communication. Pragmatically, it can be a marker of the ethnolinguistic vitality of the group(s) inhibiting the area.

The diverse and vibrant use of languages as displayed in the public sphere has made it an interesting and dynamic context for language learning. Thus, researchers have explored the potential of LL for language learning.

As put forward by Cenoz and Gorter (2008), it can serve as a source of authentic input to develop pragmatic competence and literacy skills, and raising students' language awareness.

Studies on the use of LL as a learning space for language learning have shown positive pedagogical implications. For example, Rowland (2013) in the implementation of an EFL classroom project which requires students to analyse the use of English on signs in Japan, supports the idea that LL can benefit students' learning. The study discusses the contribution of LL in developing the students' symbolic competence and literacy skills in a multiracies sense based on the students' engagement with the discourse.
In another study, Aladjem and Jou (2016) carried out a project which aimed at raising students' awareness to language exponents in their surroundings by using the LL as a learning space and an input source. Using the social media as a venue to share their findings and analyses, Aladjem and Jou claimed that the project had gone beyond the awareness of language awareness. It also indicates understanding, noticing, communicating emotions and reminiscing.

Along the same line, Barrs (2017) conducted an awareness-raising activity involving Japanese students, using LL as an input source for exposure to English. The students were encouraged to critically engage with the LL around them by looking at the place where English can be found, form in what ways English is used, and reason for the purpose of using English. It was found that the activity extended beyond classroom learning and students explored their own insights and findings like relating to the incorrect use of language.

There have been many other studies that examine the use of LL for language learning source of input (Wang, 2015; Herwitt-Bradshaw, 2014; Xi & Li, 2016; Clemente, Andrade & Martins, 2012; Floralde & Valdez, 2017). Other researchers have also conceptually recommends LL for its pedagogical benefits (Chern & Dooley, 2014; Gorter, 2006; Kamisah et al. 2018). However, in Malaysia, the studies of the use of LL for language learning are very scarce. Thus, the present study may contribute to a body of knowledge with regards to tapping the potentials of LL for language learning.

THE PROJECT

This mini project was based on learning theories that stress the importance of learning in authentic and relevant settings (Lave & Wenger, 1991). The researchers believe that students do not have the opportunities to learn in authentic settings within the four walls of the classroom. Thus, the project was created to supplement the formal learning in the classroom as well as to provide meaningful and continuous learning for the students. The aim of the project is, therefore, to connect the contents of classroom lessons to the real world outside the classroom in an informal, yet, authentic learning environment.

The project took place in the form of a fieldwork. It was actually an evaluation part of the lessons on the grammar components which included spelling, vocabulary, parts of speech and subject-verb agreement. The project involved 38 students from a pre-diploma English course in a public university. The majority of these students had very low level of English language competence, with low pass scores of D and E in English at the Malaysia Certificate Education (SPM) examination level.

The students were grouped in fours or fives and the task was to identify language errors found in public signs in towns of their choice. Three frameworks of language error were set as the framework for investigation, i.e spelling, vocabulary and grammar. The students need to capture and analyse errors found in public signs such as banners, buntings, signboards, flyers, notices and shop signs. However, these were only limited to the ones that used English language only. Signs that used any other languages were excluded from the data collection. In case where the signs contained multiple languages, only the part in English language would be considered. The students were given one week to complete the tasks of identifying, capturing and analyzing the errors. Then, they were asked to present their findings to the class. They should first present their analysis of errors, justify their analysis and correct the errors. In short, Fig.1 shows the steps of the project task:

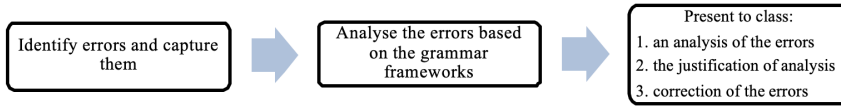


Fig. 1 Steps of Project Tas

FINDINGS AND DISCUSSION

The project has shown that learning a language needs more than memorizing formal linguistic structures and grammar rules. As put forward by Cenoz and Gorter (2008), it cannot be separated from social and contextual

aspects. This project has proven that students need to experience learning. The students became aware of the language usage in their surroundings as they played the part of active explorers, seizing the learning opportunities in an authentic surrounding which could support and scaffold their learning process.

The students' presentation of their findings suggests that students were able to notice and be aware of the errors that existed around them. At times, they were further able to identify the errors and justify their analysis as well as correcting the errors. The followings show examples taken from the students' presentations on their findings.

4.1 Spelling Errors

Students, in their analysis, were able to identify the type of errors found in the public signs. They were also able to correct the errors. It is also interesting to note that in some cases, they even took the initiative to refer to the dictionary for the confirmation of the correct spelling of the misspelt words. Fig.2 shows some examples of the spelling errors found and the corrections.

Type of Error	Correction
SPELLING: **THORW**	**THROW**

Type of Error	Correction
SPELLING: **RESTORANT**	**RESTAURANT**

Fig.2 An Analysis of Spelling Errors

4.2 Wrong Word

The examples below show that students were able to identify the wrong word used in the signs. They were able to pick up the wrong use of 'convenient' for 'convenience shop, and 'saloon' for 'hair salon' as seen in Fig. 3.

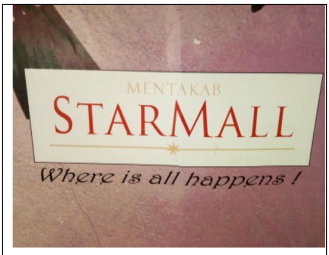
Type of Error	Correction
WRONG WORD: **CONVENIENT**	**CONVENIENCE**

Type of Error	Correction
WRONG WORD: **SALOON**	**SALON**

Fig. 3 An Analysis of Usage of Wrong Words

4.3 Language Inaccuracy

The findings indicate that the students were also able to detect language inaccuracies in the public signs. As shown in the Fig. 4 below, they were able to point out the errors in the sentence structure and subject-verb agreement elements in the company's and product's mottos.



Type of Error	Correction
SENTENCE STRUCTURE: **Where is all happens!**	**Where it all happens**

Type of Error	Correction
SUBJECT VERB AGREEMENT: **Beauty come from trusted brand**	**Beauty comes from trusted brand**

Fig. 4 An Analysis of Spelling Errors

However, it is important to note that not all errors were corrected correctly. As mentioned earlier, the students who took part in the project had low competence level in English. Thus, they were not able to correct some complex errors like sentence structure or complex grammar. Notwithstanding, the researchers felt that it was still a great accomplishment as the students were able to identify the errors. For example, the students were aware of the errors in the price list as shown by Fig. 5 below. Nevertheless, they were not sure on how to correct the errors. Similarly, they knew that the translated version of the advice given in the bus was wrong, yet, they did not know how to correct it.

Fig. 5 Errors Identified but Not Corrected

Although the students were not able to correct the errors, the researchers believe that this can provide an opportunity for extension activities on the topic. The errors found in the real world can be brought into the classroom for error correction sessions, thus, providing real and authentic examples - linking classroom lessons to the real world.

4.4 Post-Project Interview

A post-project interview with the students reveals that such an experiential learning approach using the linguistic landscapes as a learning space proved to be an exciting and meaningful learning experience for them. Apart from the common positive evaluative comments like 'the project is interesting', 'the field work is fun', 'it is exciting' and 'it enriches my knowledge' the students commented that such approach of learning had widened their horizons beyond what was learned in the classroom. They felt that this method of learning had made learning 'more meaningful' as they were able to relate and apply their learning to the real world. This is in line with other studies that such activity can increase students' exposure to and engage themselves with a foreign language beyond the limitation of the classroom environment (Sayer, 2010; Barrs, 2016).

It is also worth noting the students' perceptions of their learning. With the project, they felt 'important' as they were 'doing something real', unlike learning in the classroom where the examples were given out of context. Such claims show that the project has given them the

opportunities to explore the application of English in the real world. One student's claim that he could not help but had now started noticing the errors in signboards. This shows that continuous learning has taken place.

The interview also indicates how students' perceive the learning practice in the classroom and how they actually want it to be carried out. The students claimed that by undertaking the project, they felt 'important' and 'learnt like adults' as they became 'investigators'. As the opportunities are restricted in the classroom, this little project has shown that 'the linguistic landscape can offer a fertile area of investigation from which to develop a wide range of research enquiries' (Barrs, 2016, p. 27).

CONCLUSION

The limited contexts for language learning in the classroom may limit the students' opportunities to apply the skills learned in the real world. This paper has explored the potentials of linguistic landscapes to be considered as a source of real input for pedagogical practice in ESL/EFL education. The mini project undertaken shows that linguistic landscapes can offer vast opportunities for meaningful learning to take place. In addition, it supports a positive learning experience through learner immersion, engagement and motivation. As remarked by Lazdina and Marten (2009), LL is 'an easy and enjoyable way of involving students into field work' (p. 212).

ACKNOWLEDGEMENTS

This study is supported by the Ministry of Higher Education, Malaysia, under the Fundamental Research Grant Scheme, Project No. FRGS/1/2025/SS101/UITM/02/1

REFERENCES

Aladjem, R. & Jou, B. (2016). The Linguistic Landscape as a Learning Space for Contextual Language Learning.

Journal of Learning Spaces. 5(2), 66-70.

Al-Zoubi, S.M. (2018). The Impact of Exposure to English Language on Language Acquisition. Journal of Applied Linguistics and Language Research. 5(4), 151-162.

Barrs, K. (2017). English in the Japanese Linguistic Landscape: An Awareness-Raising Activity Examining Place, Form, and Reason. Studies in the Humanities and Sciences, Vol. LVIII No. 2, 211-224.

Cenoz, J., & Gorter, D. (2008). The linguistic landscape as an additional source of input in second language acquisition. IRAL - International Review of Applied Linguistics in Language Teaching, 46(3), 267–287.

Chern, C-l, & Dooley, K. (2014). Learning English by walking down the street. ELT Journal, 68(2), 113- 123.

Clemente, M., Andrade, A. I., & Martins, F. (2012). Learning to read the world, learning to look at the linguistic landscape: a primary school study. In C. Hélot, M. Barni, R. Janssens, & C. Bagna (Eds.), Linguistic landscape, multilingualism and social change (pp. 267-285). Germany: Peter Lang.

Floralde, R. & Valdez, N. (2017). Linguistic Landscapes as Resources in ELT: The Case of a Rural Community in the Philippines. The Journal of Asia TEFL, Vol. 14, No. 4, Winter 2017, 793-801

Gorter, D. (2006). Introduction: the study of the linguistic landscape as a new approach to multilingualism.

International Journal of Multilingualism, 3(1), 1-6.

Hewitt-Bradshaw, I. (2014). Linguistic landscape as a language learning and literacy resource in Caribbean Creole contexts. Caribbean Curriculum, 22, 157–173.

K Ariffin, Misyana Susanti Husin, G De Mello, AAS Anuarudin, NH Omar. (2018). Language in contact: tapping the potentials of the linguistic landscapes for language learning.

National Academy of Managerial Staff of Culture and Arts Herald, (1), 542-545

Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge: Cambridge University Press.

Lazdina, S. and H. F. Marten (2009) 'The "linguistic landscape" method as a tool in research and education of multilingualism. Experiences from a Project in the Baltic States'. In A. Saxena and Å. Viberg (eds) Multilingualism: Proceedings of the 23rd Scandinavian Conference of Linguistics, Uppsala University 1–3 October 2008, Acta Universitatis Upsaliensis, Studia Linguistica Upsaliensa 8. Uppsala: Uppsala Universitet.

Sayer, P. (2010). Using the linguistic landscape as a pedagogical resource. ELT Journal, 64(2), 143–154. Rowland, L. (2013). The pedagogical benefits of a linguistic landscape project in Japan. International Journal of Bilingual Education and Bilingualism, 16(4), 494-505.

Shohamy, E. (2011). Linguistic landscapes and multilingualism. Taylor & Francis, 538–551.

Xi, N. & Li, L. (2016). Studying languages in the linguistic landscape of Lijiang Old Town. International Journal of English Linguistics, 6(2), 105-117.

Wang, J. (2015). Linguistic Landscape of China - A Case Study of Shop Signs in Beijing. Intercultural Communication Studies, 24(1), 123 – 144.

Impact of GBL on Student Performance and Learning Behaviour : Experience in UiTM Melaka

Rani Diana Othman, Ismadi Md Badarudin, Nurul Hidayah Ahamad Nawawi

Faculty of Accounting, Universiti Teknologi MARA, UiTM Melaka, Malaysia diana067@uitm.edu.my
Faculty of Computer and Mathematic, Universiti Teknologi MARA, UiTM Melaka, Malaysia ismadi73@uitm.edu.my
Faculty of Accounting, Universiti Teknologi MARA, UiTM Melaka, Malaysia nurulhidayah@uitm.edu.my

Abstract: Computer integrated system has commonly used to increase classroom engagement by educators in schools and universities. It is to enhance students' learning interest toward studies and improve their academic result which relates to weakness of the traditional based learning process. Moving towards the 21th century, education environment has also introduced with Game-Based Learning (GBL) used to encourage students to participate in learning, while having fun and creating more interesting learning process. As an interactive learning setting, GBL provides an opportunity for the teaching process to evolve through the incorporation of game elements. GBL is suggested able to capture students' attention, motivation towards goals, promote competition, effective teamwork and improve communication. This study investigates the effectiveness of a game-based learning program adapted from a television show known as 'Who Wants To Be A Millionaire?' to assess students' academic performance. It compares students' performance before and after the game was introduced in the learning process. Through the intertwining of learning, game and computer usage, this study shows that GBL able to increase understandability, interest, result performance and enjoyment (fun) towards the subject. Therefore, it is suggested that current educational framework should seriously adopted GBL as it provides important elements of the 21st century skill of digital literacy, critical thinking and problem-solving criteria to help our students thrive in today's world.

Keywords: *Game-Based Learning, Learning process, 21th Century Learning*

INTRODUCTION

In the era of 21st century, the way of learning has evolved tremendously. Modern teaching aids are important and most preferred in the technological age. One of the most curret educational method use in teaching is Game-based learning (GBL) that uses technology to impart education (Barzilai & Blau, 2014; Cheng & Su, 2012). GBL refers as a game play that has learning outcomes and designed to balance subject matter with the ability of the player to retain and apply the subject matter to the real world. It involves competition, even if the competition is with oneself. It has goals, constraints, payoffs, consequences and rule-guided (Al-Azawi, Al-Faliti, & Al-Blushi, 2016). Through GBL, the learning process is easy, more interesting and and provide a creative platform to the students (Cheng & Su, 2012).

GBL borrows certain gaming principles and applying them to real-life settings in order to improve users' participation. It is not just creating games to play, but it also involve learning activities that can progressively introduce concepts and guide students towards the learning outcome. The motivational psychology embedded in GBL allows students to adopt the developed educational materials in a playful and dynamic way. Game is defines as a system that involve interaction with a user interface to generate visual feedback on a computer or a video device to utilize fun, play and competition (Shabanah, Chen, Wechsler, Darr & Wegman, 2010). Fun is created in a game when a player able to achieve the goal of the game, feeling intellectual and aesthetic with something which is unpredictible, being challenges to solve dificult problem and feeling honor when they won the game (Takaoka, Okamoto & Shimokawa, 2011).

It is very important for learning process to have the fun element. Research in neuroimaging and neurochemical suggest that 'superior learning' takes place when classroom experiences are enjoyable and relevant to the students' lives, interest and experience (Pawlak, Magarinos, Melchor, McEwan, & Strickland, 2003). This is supported by education theorist that suggests most students retain what they have learnt when they have strong emotion (Dulay & Burt, 1977). In contrast, stress, boredom, confusion, low motivation and anxiety can interfere the effectiveness of student's learning process (Christianson, 1992). Fun learning environment contributes by active learning experience where the students are energeticly doing thing and at

the same time thinking about the activities that they involves in.

Sung, Hwang, Lin and Hong (2017) asserted that experiential game-based learning approach will not only help the students to broaden their knowledge acquisition but also increase students' motivation in learning process. It is supported by Cheng and Su (2012) which found that learning interest and motivations have significant impact on learning achievements by students who are engaged by game-based learning rather than students who were using face-to-face teaching method. Since strategic games improve the functioning of brain, it creates a dynamic that can inspire learners to develop skills and build an emotional connection to learning and subject matter. Other study also suggests that GBL can provide an effective way to motivating learning experiences that would increase student interest in the respective areas and improve student academic performance (Barzilai & Blau, 2014).

One of the most important contribution of GBL is, it helps the students to understand the meaning of learning, which will lead them to be a life long learners with positive attitude (Sung et al., 2017). This philosophy toward more active learning suggests that the aim of teaching is not to transmit information but to transform students from passive recipients of other people's knowledge into active constructors of their own and others' knowledge (Ellerman, 1999). The knowledge and skills acquired through game-based learning are retained longer than information from other learning methods.

Chow (2013) suggests, adaptability and non-linearity are prominent directions in today's pedagogy and are more efficiently achieved in GBL. This is because educational games can be dynamically adjusted according to the learner's interaction and performance. While goalbased learning, which is prominent in nonlinear pedagogy, can be introduced as the goal of the game. A gameplay- based structure of the learning process has been proven to engage learners to accomplish learning goals. Cheng, Lin, She & Kuo (2016) opined that GBL able to facilitated student science learning achievement since it is often believed to have the potential in facilitating both the cognitive and affective/motivational processes of learning. Yien, Hung, Hwang and Lin (2011) studies on the impact of using game-based learning on nutrition students. The study reveals positive attitudes towards using game-based learning hence improve their learning achievements.

Qian (2016) asserted that GBL approach able to facilitate 21st century skills acquisition among students. The 21th century skills refers to wide range of skills such as lifelong learning, innovation skills (communication, critical thinking, problem solving, creativity), information and technology skill (Binkley et al., 2010). Therefore, GBL requires people to be critical thinker, creative and internet savvy. Thus, it provides room for the students to develop their skills and increase their motivation in learning. Game-based learning also plays important role in teaching by making students to collaborate, communicate, interact and work in teams (Korman & Johnston, 2013). A good design of a GBL should engage the students, promote meaningful learning, increase self-interaction and enhance student motivation (Qian & Clark, 2016; Tan, Goh, Ang, & Huan, 2016). In addition, game-based learning helps the students to understand the meaning of learning, which will lead them to be a life long learners with positive attitude (Sung et al., 2017).

Beside the above discussion, GBL is also in line with the 21th generation's way of learning as they are reported to spend more times playing games either digital or online. Based on Statista Research Department on 27 September 2018, the number of hours spent by Malaysian teenager on playing video or computer games is increasing since year 2016. By accomodating GBL in their learning process, it

will evoke in players' experience of flow and positive emotions and reduce their addiction to non- academic games besides creating a new learning culture that corresponds better with students' habit and interest.

Table 1. Percentage of hours spend on video or computer games by Malaysian teenagers

Hours spend	2016	2017	2018
Less than 1 hour	14.1%	14.08%	13.63%
1 to 3 hours	29.62%	29.17%	31.09%
4 to 10 hours	21.56%	22.41%	24.88%

Beside introducing fun in learning process, GBL also helps to improve remedial students with difficulties in learning due to lack of interest, lack of self-confidence or having negative attitudes towards learning. This proposed for the need to pay more attention to individual differences among students as some of them might learn better in GBL environment. Introduction of GBL also triggers creativity among educators to match their student learning

styles and reduce their burden in assessing their student's performance as the scores can be automatically assessed by the digital games.

METHODOLOGY

Thus, sociocultural learning theory (Vygotsky, 1978) could be incorporated in designing a meaningful game-based learning. Learning takes place when it is active, social and situated (Vygotsky, 1978). Play is important in learning as the students able to have play experiences which farther stretch their conceptual abilities and knowledge. Vygotsky's sociocultural theory of human learning describes learning as a social process and the origination of human intelligence in society or culture. The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition. Vygotsky believed everything is learned on two levels. First, through interaction with others, and then integrated into the individual's mental structure. A second aspect of Vygotsky's theory is the idea that the potential for cognitive development is limited to a "zone of proximal development" (ZPD). This "zone" is the area of exploration for which the student is cognitively prepared, but requires help and social interaction to fully develop. Therefore, game-based learning could provide incredible, realistic immersive learning environments.

In line with Vygotsky's theory, research design of this study consists of pre and post experiment on two groups of student. Experimental methods are commonly used in the cases of empirical studies conducted in educational settings. They are used to investigate the potential impact of educational innovations, in which observation of interactions between learners and the innovations takes place within the classroom environment.

With GBL program adapted from a television show known as 'Who Want To Be A Millionaire' (WWTBAM), this study attempt to probe the effect of GBL towards students' learning behaviour and performance. The game contains 150 multiple choice questions and challenge the student to be the richest player by granting them with different amount of money-point as the rewards of their achievement. Questions are divided into three levels of difficulties consisting 50 questions in each level with increasing rewards. In each level, the students will be tested with 15 questions which will be randomly selected by the computer. Once they fail any level, they will

have to play the game from the beginning with different set of randomly selected questions. The students also provided with lifeline (talian hayat) to assist them in winning the game. Students with the highest score of money-points and shortest time taken to answer all the question correctly will be the winner of the game.

The study was conducted on two different groups of student. The first group was students from the Faculty of Computer Science and Mathematics enrolling in CS134 course in Jun 2013 – November 2013. They were introduced with WWTBAM during their learning process of the semester and encouraged to play the game in group setting to promote communication. Their examination result will then compared with the previous semester's examination result (Dec 2012 – Mac 2013) of the same course. The second group experimenting WWTBAM was a group 50 students of the Majlis Perwakilan Pelajar (MPP) in Dec 2016 – Mac 2017 undergoing a leadership training program organised by the Office of Students Affairs, UiTM Melaka. New sets of questions regarding leadership skills and UiTM policies were developed and gathered into the game database. The training program were also re- constructed using the GBL approach. Their knowledge and leadership skills were then compared to previous group of MPP's students who underwent the same training program.

The interfaces and stages of the GBL were explained and presented in the following figures:

Fig. 1 Qualifying phase of Who Wants to be a Millionaire

The above figure represent the initialising or the entrance phase of the game. The students will need to answer the question correctly before they are qualified to joint the game. Random questions will be selected by the program and students are allowed to repeat their attempts.

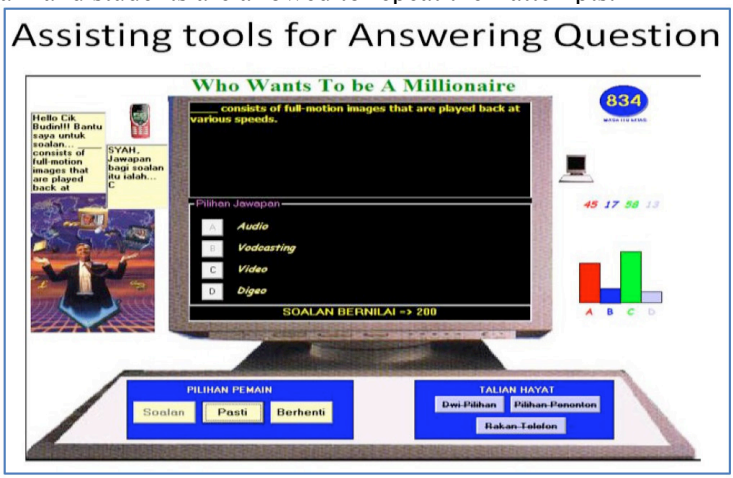


Fig. 2 First level difficulties (RM100)

The first level of the game offer RM100 money-point if the student managed to answer it correctly. Correct answer of the first level will entitle them to compete in the first level until they managed to win RM1,000 money-point as the biggest reward to qualify them to enter into the second level of the game.

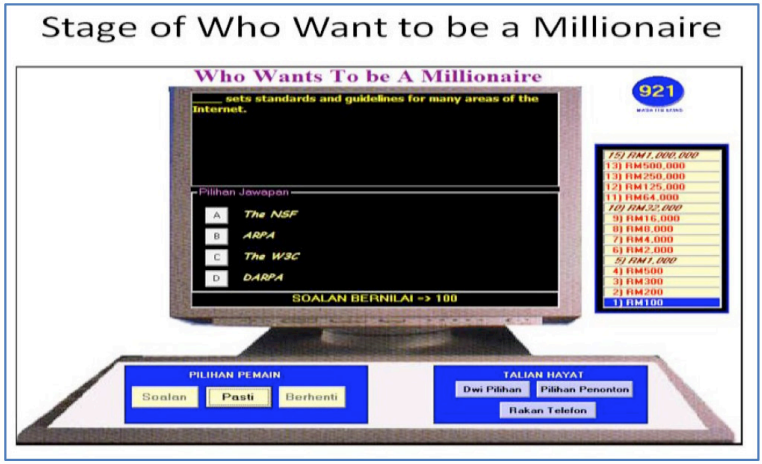


Fig. 3 Lifeline Interface

The game also provide an active interaction during the game session. Three lifelines is provided where students are allowed to used it when necessary. The options of lifeline are (i) two-option choice
(ii) audience's choice and (iii) friends.

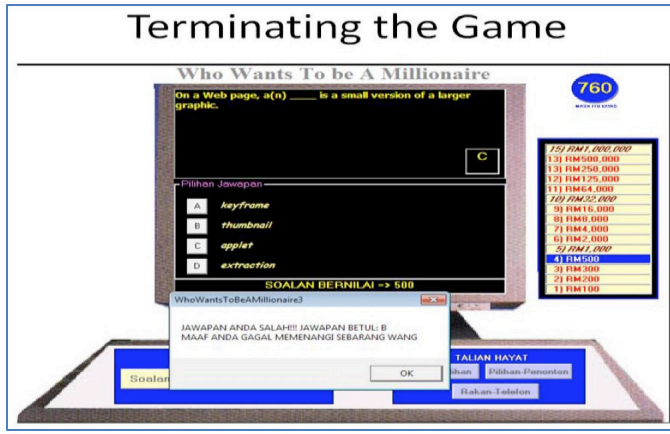


Fig. 3 Game Termination

If the student fails to answer the question correctly and used all the lifelines provided, they will be terminated from the game. Students will only allowed to maintain the money-point earned once they managed to pass the first level of the game. In order to re-joint, the student will need to register as a new player and repeat the qualifying phase again.

Fig. 4 Player Ranking Interface

Once the student successfully accomplished the game with the shortest time, their name will be listed at the top of the Player Ranking Interface. Other students will need to challenge the time ranked in order to be the next winner or the richest player of the WWTBAM game.

RESULTS AND DISCUSSION

i) Students enrolling CS134 course

The analysis of the previous examination result of CS134 (Dec 2012 – Mac 2013) shows a low percentage of students that able to answer the multiple question correctly since they are unable to thoroughly read the question and found it very technical besides having only ¼ chance to answer it right. With the introduction of WWTBAM during the semester, analysis on the tested group's result shows that percentage of students managed to pass the multiple session question has increased by 70%. In addition to their examination result, a survey on the effectiveness of WWTBAM was conducted. The following tables shows students' perception on the effect of WWTBAM game-based learning program towards their learning behaviour.

Table 2. Survey on Learning Behaviour (post experiment)

	Yes	No
Increase in performance	62%	38%
Understandability	82.7%	17.3%
Having fun	80%	20%
Increase interest	80%	20%

ii) Student Leader Group (MPP)

Based on the same method of pre and post experiment, WWTBAM game-based program was introduced and conducted only on student leader group in Dec 2016 – Mac 2017. Prior semester's student leaders' knowledge and leadership skill were measured and reported at less than 50%. With GBL game-based program of WWTBAM, the new student leaders' knowledge and leadership performance has increased to 100%.

CONCLUSION

Based on the result of the pre and post of the study, it shows that GBL has managed to increase students' performance on the subject taught as it able to improve cognitive skills, mental mapping and positive behaviour among students (Michael & Chen, 2017). Students were found to participate in two ways during the game: (i) by accommodating their own behaviour during the conveyance of the learning content and (ii) capturing affective learner behaviour when interacting with the content (Tsatsou, Vretos & Daras, 2019). The findings also suggest that GBL can also be an effective approach to develop leadership skills as it promote motivation skill, facilitation, coaching, mind-set changing, and communication.

As GBL method promotes positive attitudes especially among the 21th century, more studies should be conducted to access how game-based learning could enable students to develop certain useful skills and competencies; communication, resourcefulness and adaptability skills. These attributes are important and crucial for them to apply in the future workforce. Such skills are referred as 'graduate attributes' and are generally associated with the employability of higher education graduates.

REFERENCES

Al-Azawi, R., Al-Faliti, F., & Al-Blushi, M. (2016). Educational gamification vs. game based learning: Comparative study. International Journal of Innovation, Management and Technology, 7(4), 132-136

Barzilai, S., & Blau, I. (2014). Scaffolding game-based learning: Impact on learning achievements, perceived learning, and game experiences. Computers & Education, 70, 65-79. doi:https://doi.org/10.1016/j.compedu.2013.08.003

Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., & Rumble, M. (2010). Draft white paper 1: Defining 21st century skills. Available online also at: http://cms. education. gov. il/NR/rdonlyres/19B97225-84B1-4259-B423- 4698E1E8171A/115804/defining21stcenturyskills.pdf [accessed in Kota Kinabalu, Malaysia: April 15, 2015].

Cheng, C.-H., & Su, C.-H. (2012). A Game-based learning system for improving student's learning effectiveness in system analysis course. Procedia - Social and Behavioral Sciences, 31, 669-675. doi:https://doi.org/10.1016/j.sbspro.2011.12.122

Cheng, M.-T., Lin, Y.-W., She, H. C., & Kuo, P. C. (2016). Is immersion of any value? Whether, and to what extent, game immersion experience during serious gaming effects science learning. British Journal of Educational Technology, 48(2), 246- 263.

Chow, J. Y. (2013). "Nonlinear learning underpinning pedagogy: evidence challenges and implications", Quest, vol. 65, no. 4, pp. 469-484.

Christianson, S.A. (1992). Emotional stress and eyewitness memory: A critical review. Psychological Bulletin, 112(2), 284–309.

Dulay, H., & Burt, M. (1977). Remarks on creativity in language acquisition. In M. Burt, H. Dulay, & M. Finocchiaro (Eds.), Viewpoints on English as a second language. New York: Regents.

Ellerman, D.P (1999). Global Institutions: Transforming International Development Agencies into Learning Organizations. The Academy of Management Executive (1993-2005), Vol. 13, No. 1, Global Competetiveness. Part II (Feb., 1999), pp. 25-35

Korman, T. M., & Johnston, H. (2013, 23-26 Oct. 2013). Using game-based learning and simulations to enhance engineering and management education. Paper presented at the 2013 IEEE Frontiers in Education Conference (FIE).

Michael, D. R., & Chen, S. L. (2005). Serious games: Games that educate, train, and inform. [Electronic version]. Publisher: Muska & Lipman/Premier-Trade. Retrieved June 11, 2017, from http://0-site.ebrary.com.aupac.lib.athabascau.ca/lib/athabasca/edf.action?p00=&docID=1008 7000&page=10.

Pawlak, R., Magarinos, A. M., Melchor, J., McEwen, B., & Strickland, S. (2003). Tissue plasminogen activator in the amygdala is critical for stress-induced anxietylike behavior. Nature Neuroscience, 6(2), 168–174.

Qian, M., & Clark, K. R. (2016). Game-based Learning and 21st century skills: A review of recent research. Computers in Human Behavior, 63, 50-58.doi:https://doi.org/10.1016/j.chb.2016.05.023

Shabanah, S. S., J. X. Chen, J. X., Wechsler. H, Carr. D., and Wegman., E. (2010). "Designing computer games to teach algorithms," in Proc. 2010 Seventh International Conference on Information Technology: New Generations, 2010, pp. 1119–1126.

Sung, H.-Y., Hwang, G.-J., Lin, C.-J., & Hong, T.-W. (2017). Experiencing the Analects of Confucius: An experiential game-based learning approach to promoting students' motivation and conception of learning. Computers & Education, 110, 143-153. doi:https://doi.org/10.1016/j.compedu.2017.03.014

Tan, J. L., Goh, D. H.-L., Ang, R. P., & Huan, V. S. (2016). Learning efficacy and user acceptance of a game-based social skills learning environment. International Journal of Child-Computer Interaction, 9-10, 1-19. doi:https://doi.org/10.1016/j.ijcci.2016.09.001

Takaoka, R., Okamoto. T., and M. Shimokawa. (2011).“A framework of edu- cational control in game- based learning environment,” in Proc. the 2011 11th IEEE International Conference on Advanced Learning Technologies, ICALT 2011, pp. 32–36, 2011.

Tsatsou, D., Vretos, N. & Daras, P. Journal of Computer Education (2019) 6: 215. https://doi.org/10.1007/s40692-018-0118-9

Vygotsky, L. S. (1978). Mind in Society: The develeopment of higher mental process. Cambridge, MA: Harvard University Press.

Yien, J.-M., Hung, C.-M., Hwang, G.-J., & Lin, Y.-C. (2011). A game-based learning approach to improving students' learning achievements in a Nutrition course. Turkish Online Journal of Educational Technology-TOJET, 10(2), 1-10

Integrating ICT In ESL Classroom: A Survey On Teachers' Perceptions In Using Frog VLE For English Lesson

Johan @ Eddy Luaran, Fariha Amalina Zoolkafli, Jasmine Jain

Faculty of Education, Universiti Teknologi MARA,
UiTM Puncak Alam Campus, 42300 Puncak Alam, Selangor, Malaysia
farihaamalina05@yahoo.com
School of Education, Taylor's University

Abstract: Information and Communication Technology (ICT) is a medium that can be utilised in English lesson. Frog VLE comes into the picture to embrace the use of ICT in Malaysian education. Hence, this research studied the perception in using Frog VLE in English lesson amongst English language teachers in nine secondary schools in Melaka Tengah district. This study employed quantitative research design whereby questionnaires were distributed to the desired sampling in the selected secondary schools. There were 42 respondents who were English language teachers and it was carried out as an online survey. The instrument was a combination of Likert-scale items and one open-ended question. The quantitative data was analysed using SPSS software whilst the open-ended question was analysed using thematic coding analysis. The results revealed that the English language teachers' level of knowledge was moderately high (M=2.59, SD=0.77). Meanwhile, the teachers' perceptions in terms of Frog VLE usefulness, ease of use, and students' motivation in English lesson was moderate (M=3.44, SD=0.56). In addition, the issues or challenges in Frog VLE integration was also rated moderate (M=2.98, SD=0.74). The suggestions to overcome the issues or challenges were grouped into organisational level, 87% and individual level 13% respectively. To conclude, the study explored the gaps in which the previous literature did not address which was the integration of Frog VLE in ESL lesson amongst the secondary schools. The suggestions of ways would also be insightful for MOE to develop suitable solutions for the arising issues as the suggestions were proposed by the teachers who were the direct users of Frog VLE.

Keywords: *English language teachers, Frog VLE, ICT, perception, survey*

INTRODUCTION

Humans have to cope with the fast development of the world as it is changing rapidly. For the generation of today, it is not a problem for them since they are born with it. ICT has been an integral part in today's era and Budhedeo (2016) asserted that ICT is valuable in education and has a direct role especially in digital literacy. In addition, Ministry of Education (2012) stated in Malaysia Education Blueprint 2013-2025 that the 7th shift is to "leverage ICT to scale up quality of learning across Malaysia" (p. E-28). Various measures have been taken by MOE to step up the use of ICT for instance Smart Schools, virtual learning environments, distance and self-paced learning, and video library of best teaching practices. ICT is too wide that it covers many aspects. It includes software, hardware, media tools, social media networks, internet, and the list goes on. This is supported by Melor et al. (2013), as they said that radio, television, computers, Internet, social networks and others are technologies.

With the growing demand of technology in Malaysia, many schools are incorporating Frog VLE through the 1BestariNet project. According to Frog Asia (2016), Frog VLE is available to all 10000 schools in Malaysia and it was designed by Frog Education to make teaching simpler and improve teaching and learning, communication, and administration. When it was first introduced, it received a mixed reaction from teachers all over Malaysia. Some agreed with the idea and some felt that it was an additional burden to the workloads that teachers were facing. Termit and Noorma (2015) supported this and claimed that work load was a probable factor that influenced the teachers' negative perception towards the program. To implement a new thing in a norm really takes time. They further stated that the Frog VLE Project under 1BestariNet was initiated in MOE schools in 2011 but only 351 schools were involved and were categorised as Champion Schools. So, it has been 7 years now after its first introduction but the impact on the learners is not really apparent on how it changes the educational system. Moreover, schools are provided with computers and high-speed 4G internet connectivity but the implementation of Frog VLE is still questionable. Although Frog VLE is now made compulsory for teachers to use in some schools, there is an issue to use it due to the lack of facilities and a few barriers.

Currently, a new move by the government has been made to ensure teachers fully use Frog VLE in lesson and that is to provide school teachers with smartphones. A few states have been given the smartphones like Melaka, Kuala Lumpur, and Selangor. Being in the education system itself, the researcher personally feels that teachers need a lot of guidance to use Frog VLE in lesson. In order to use Frog VLE in a lesson, teachers have to undergo training and do preparation since there are many widgets and updates that teachers need to be familiarised with. GM1M (Guru Muda 1 Malaysia) is also created for young teachers to be skilful at using Frog VLE. As supported by Lee (2016) that GM1M is aimed to upgrade the skill of young teachers across Malaysia with the use of Frog VLE in teaching and learning in which it is a programme between the MOE, YTL Communications, and Frog Asia. However, the problem is the impact of Frog VLE is still doubted and makes some teachers ponder whether this is a good move by the ministry. Despite many efforts have been made by MOE and 1BestariNet, it is deemed as a failure by Public Accounts Committee (PAC). This is supported by Fernando (2016) who said that the project was considered a failure from user-end experience to supplying internet access to schools.

Other than this, the world has changed and so do the learners. Dealing with learners in those days were very much different with millennial learners. They are raised with many developments of technology. They are even too exposed to online gaming or spending too much time playing games and this is a major problem with teenagers nowadays. It is the job of the teachers to turn technology into a positive tool. We are living in the age of electronic communication and technology and children nowadays are very literate with technology. Frog VLE is a tool that can make students be fully engaged in learning as Prensky (2001) claimed that the students' thinking is evolving in parallel with modernity. So, it is not surprising that some students are no longer responding to the traditional teaching method like chalk and talk or rote learning. Learning lesson in a traditional way can also be interactive but not as interactive and engaging as using ICT because students can experience a lot more with it. Hence, if we ignore technology, learners' future may be at stake and damage the quality of learning that students can explore. Teachers should be able to see what Frog VLE can offer and this research tried to look at their openness to teaching method using Frog VLE.

Thus, this study looked into the English language teachers' perceptions on the use of Frog VLE in English lesson and the issues or challenges that hinder the low usage of Frog VLE. At the end, suggestions to overcome the issues or challenges were provided.

LITERATURE REVIEW

Structure Within a Learning Management System: Frog VLE

Frog Asia has structured Frog VLE to involve school administrators, teachers, students, and parents. The basic features of Frog VLE are as follows (Frog Asia, 2016):

1.Content creation
2.Content management
3.Administration
4.Assessment
5.Reporting
6.Communication
7.Personalise
8.Content
9.Revision
10.Quizzes
11.Portals

As Frog VLE is also a learning management system (LMS), it follows the same structure of LMS but with slight differences. Figure 1 is the structure within a Frog VLE adapted from LMS:

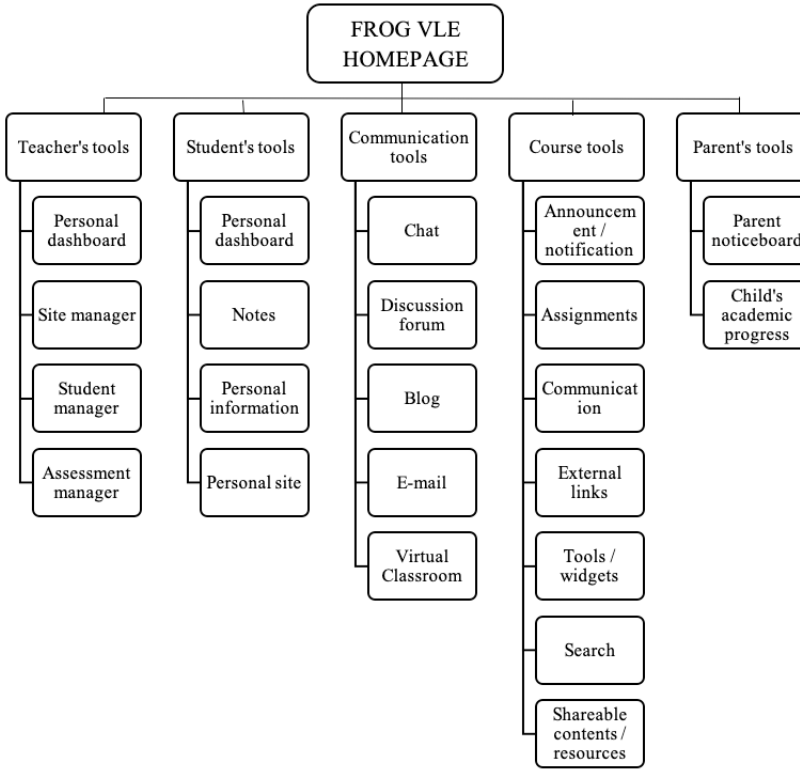


Fig. 1 Structure Within Frog VLE. Adapted from: Khine (2006)

Comparison Between Traditional Teaching and Frog VLE

Table 1 shows the comparison between Frog VLE and traditional teaching method. This table was revised for this study to suit Frog VLE platform.

Table 1. Comparison between Traditional Teaching and Frog VLE

Considering Factors	Traditional Teaching Method	Frog VLE
Resources	Resources available within a library or information centre unit. More expensive because you may take a lot of time searching for it.	Learning materials and resources available within the system are less expensive or free, partly because you do not have to pay for facilities.
Classroom discussion	The teacher usually talks more than the students	The students talk at least as much as or more than the teacher
Scheduling	Require you to attend class a certain number of times every week, at specific times during school days.	User-driven time and learning schedule
Course matter	The teacher conducts the lessons according to the syllabus and existing curriculum	The studying is based on various sources of information such as web data banks and teacher can carry out lesson according to the syllabus and curriculum
Learning process	The learning is conducted with whole class participating	Most of the learning process takes in groups or by an individual student
Location of learning	In the classroom, the learning takes place within the school and classroom	Discussion forum, video conference, chat rooms, the learning takes place with no fixed location
Motivation	The student's motivation is low, and subject matter is distant from them	The student's motivation is high, due to the involvement in matters that are related to them and with the use of technology
Interaction	Spontaneous, student can interact with other students	Structured, student can interact with other students and teachers virtually

Adapted from: Abdirahman, Nor Hidayati and Ahmed Hussein (n.d.)

Perceived Usefulness and Ease of Use of Frog VLE

Perceived usefulness and ease of use of a technology tool are taken from Technology Acceptance Model (TAM) by Davis (1989). "Perceived Usefulness (PU) is defined as the degree to which person believes that using a particular system would enhance his or her job performance. Perceived Ease of Use (PEOU) refers to the degree to which a person believes that using a particular system would be free of effort" (Siaw & Agatha, 2015, p. 6). The TAM is an information systems theory that models how users come to accept a technology and how they use that technology. In TAM model, there are two factors that are relevant in computer use behaviours. For this study, it is the Frog VLE use behaviours. According to TAM, ease of use and perceived usefulness are the most important determinants of actual system use.

In this present study, PU helps to explore the English Language teachers' beliefs whether Frog VLE could enhance the job performance. On the other hand, PEOU explores whether the teachers believe that the use of Frog VLE in lesson would make it easy for the teachers and it is free of effort.

Gardner's Multiple Intelligences Theory and the Integration of Frog VLE in Teaching and Learning Process

Logical/mathematical: Teachers can assign logical-based problems or quizzes and let students complete the task in Frog VLE.

Spatial/visual: Students can answer readily-available quizzes in Frog VLE at their own pace and space. The quizzes include diagrams, colours, arts, and graphs.

Intrapersonal: Students can build their own blog in Frog VLE as each student has a personal site and dashboard. They can treat that as their own personal space to write their thoughts.

Interpersonal: Students can use the forum or chat tools to have a discussion among them on a certain topic. This allows collaborative learning done in online manner.

Bodily-kinaesthetic: Videos and project can be embedded into Frog VLE platform which allow for the enjoyment of activities that involve movement. Students can do 'scavenger hunts' activity on the web while completing the task in Frog VLE.

Musical: Teachers can share link of videos or music and let students complete the task relating to the videos or music. Teachers can teach grammar through songs or videos in Frog VLE.

Verbal/linguistic: Teacher can give written assignments in Frog VLE in any topic on any skills; speaking, writing, reading, and listening.

These are only suggestions of activities that are linked to MI and Frog VLE whereby there are a lot more that can be done. The suggestions are based on Fose's (n.d.) article on exploring technology to address students' multiple intelligence and learning styles. Fisher (2005) suggested that in order to help learners in every lesson, teachers have to put attention on an aspect of thinking or intelligence. Indirectly, MI theory in Frog VLE links to students' motivation in learning.

Jones (2002) studied on ICT and learning theories. One of the theories he explained in relation to ICT is multiple intelligence theory. He stated that teachers can develop many activities to enhance students' multiple intelligences by giving them the opportunity to use content-free software like word processors. In another study by Kunjal (2015), he investigated the role of MI in e-learning and found out that students who had different intelligence were required to use an efficient manner of e-learning. Hence, a controlled usage of Frog VLE should be made known to the students so that they know what can help them to enhance learning.

Issues or Challenges in Using Frog VLE

Issues and challenges in Frog VLE should be taken into consideration as these limits its usage in the class. With the purpose of apprehending this further, a lot of studies have been done to examine the challenges in full adoption of technology and Frog VLE in classrooms.
Albirini (2006) identified a few challenges in ICT usage in Syrian

education. The issues were teachers' lack of computer competence and computer access. The researcher further claimed that the major hindrance of the integration of technology in education was the scarcity of computer resources available for teachers and this had been extensively reported in the literature. Siti Nazuar (2014) distinctively studied on the barriers influencing teacher's technology integration. The barriers were classified into two groups that were first-order barriers and second-order barriers. It is understood that the first-order barriers were "limited access to computer and technical support, lack of technology training, and lack of time", whilst the second-order barriers were "teacher's knowledge, attitude, perception, beliefs and commitment towards technology" (p. 353). More interestingly, the researcher listed a few researchers who had studied on factors influencing integration of technology among teachers in Malaysian schools. They were Bakar and Mohamed, 2001; Darus and Luin, 2008; Lau and Sim, 2008; Mahmud and Ismail, 2010; Samuel and Abu Bakar, 2006; Wan Ali et al., 2009. Based on the factors found from the previous literatures, Siti Nazuar (2014) categorised the frequently-mentioned barriers into first-order and second-order barriers reported from these studies.

In a pilot study done by Siaw and Agatha (2015), they asserted that the main determinant factor is the lecturers' attitudes in using Frog VLE. It is noteworthy that the lecturers in this study had positive attitude to use Frog VLE and they were not negatively influenced by "technological complexity, facilitating conditions, and self-efficacy." (p. 15). In another research by Chipps, Kerr, Brysiewicz, and Walters (2015) on the LMS use of university students, they categorised the factors influencing LMS use to individual, organisational, and learning management factors. Individual factors involved having a computer, computer literacy, and individual attitudes towards technology. Meanwhile, organisational factors included training and support provided by instructors and the university. On the other hand, LMS factors that were examined were not relatively compatible to the issues or challenges in this study, hence this is omitted. The findings from this study showed that computer literacy was a significant factor for the implementation of LMS. Age and computer literacy affected the LMS use.

In another study to utilise Frog VLE by Termit and Noorma (2015), the challenges were insufficient duration of training and supply, inefficient internet access, time-consuming efforts to create teaching material online, and teachers' workload. Shahfiezul and Fariza (2015) studied on implementation and challenges in using Frog VLE among Malaysian schools. It is undisputable that there were a few challenges that were notifiable. The challenges were lack of teachers' knowledge, lack of time to prepare teaching materials online, inadequate ICT and internet access, and inadequate computer supply to cater to a large number of students.

All the researches were done in Malaysia except Albirini (2006). The similarity of all the studies was insufficient number of computer resources and access be it in Malaysian or foreign schools. Regarding technology, teachers and students need training to integrate technology or Frog VLE fully in lesson. This is the main reason that lack of training and support was considered as a factor that affected Frog VLE use from studies by Siti Nazuar, 2014; Chipps et. al., 2015; Termit and Noorma, 2015; Shahfiezul and Fariza, 2015. Nor Fadzleen, Halina, and Haliza (2013) affirmed that "in the context of Malaysian schools, the ineffective and limited ICT mastery of teachers and learners has always been identified as the main argument for the project success in Malaysian schools. This is accurate seeing that a few of the mentioned studies detected ICT or computer literacy as a challenge as well.

RESEARCH QUESTIONS

1. What is the English language teachers' level of knowledge of Frog VLE?
2. What are the English language teachers' perceptions towards the usage of Frog VLE in terms of the usefulness, ease of use, and motivation of students?
3. What are the English language teachers' issues or challenges when using Frog VLE in English lesson?
4. What are the suggestions to overcome the issues or challenges that English language teachers face when using Frog VLE in English lesson?

METHODOLOGY

This study used quantitative approach for the researcher to address the research objectives and to assess the findings of the research based on the data collected. However, to get a more enriched data, qualitative data was obtained through one open-ended question on suggestions to overcome issues or challenges, in the questionnaire. The survey was conducted using questionnaires to English language teachers from 9 secondary schools in Melaka Tengah district. The questionnaire was prepared online in Google Form and the link was distributed to a representative of English language teachers from each school. Specifically, for the purpose of this research, the questionnaire was adapted from another research, Albirini (2006) because construction of a questionnaire even it is straightforward is always a laborious and challenging task (Fraenkel et. al., 2016). The questionnaire adapted a few sections from the original questionnaire to access information exclusively for section A, B, and C. Section D was developed after going through different literatures on issues or challenges and then were added to the questionnaire. Whilst section E was a self-developed open-ended question. This was also to ensure the validity and reliability of the instrument. The items in the questionnaire were adapted from Albirini's research on teachers' attitudes toward ICT. The instrument had gone through a few changes. Since the existing questionnaire was about ICT, the words computer and ICT were changed to Frog VLE. The questionnaire was designed to be close-ended and the perceptions were measured based on Likert scale ranging from strongly agree to strongly disagree since it is most suitable to be used to assess perceptions and attitudes as supported by Peterson (2000), who said that Likert-type scales are often used to find out the basis of summated opinion of respondents. This is a cross-sectional survey whereby the survey would be carried out one time only.

In section A of the instrument, it focused on demographic profiles of the respondents that are of gender, age, years of teaching, type and name of school, highest qualification, Frog VLE training course, experience of computer use, and time of using Frog VLE. In section B, the focus was on the teachers' perceptions in terms of three dimensions that are 1) usefulness, 2) ease of use, and 3) students' motivation when using Frog VLE in English lesson. Section C focused on teachers' level of knowledge of Frog VLE. Section D identified the issues or challenges that the teachers faced when

using Frog VLE. Finally, section E was an open-ended question asking for suggestions of ways to solve the issues or challenges identified in section D.

RESULTS AND DISCUSSION

Section A: Demographic Data of the Respondents

Table 2. Demographic Data of the Respondents

Profile	Data	Frequency	Percentage (%)
Gender	Male	11	26.2
	Female	31	73.8
Age Group	20 to 29 years	18	42.9
	30 to 39 years	13	31.0
	40 to 49 years	6	14.3
	50 to 59 years	5	11.9
Years of Teaching Experience	Less than 1 year	3	7.1
	1 to 5 years	15	35.7
	6 to 10 years	12	28.6
	11 to 15 years	4	9.5
	16 to 20 years	1	2.4
	Over 20 years	7	16.7
Type of School	Urban	20	47.6
	Rural	22	52.4
Highest Completed Academic Degree	Bachelor's degree	41	97.6
	Master's degree	1	2.4
Attendance of training course, workshop, or seminar on using Frog VLE	No	8	19.0
	Yes	34	81.0
Experience of computer use	1 to 5 years	5	11.9
	6 to 10 years	11	26.2
	More than 10 years	26	61.9
How long have you been using Frog VLE?	Less than 6 months	4	9.5
	6 months to 1 year	4	9.5
	1 to 3 years	27	64.3
	More than 3 years	7	16.7
	Total	42	100.0

RQ1: What is the English language teachers' level of knowledge of Frog VLE?

It was found out that the overall teachers' level of knowledge of Frog VLE was moderately high (M=2.59, SD=0.77). This was due to the high mean range scale $2.50 \leq 2.59 \leq 4.00$. The findings from this section in Table 3 revealed that the English language teachers had the lowest level of knowledge in creating, M=2.51 and SD=0.79. The teachers had the highest level of knowledge in assigning, M=2.68 and SD=0.82.

81% of the respondents had attended training course and 64.3% of them had

1 to 3 years of experience using Frog VLE. However, findings indicated that despite having 1 to 3 years of experience, it was apparent that the teachers in this study did not have very high competence level which they should have acquired after years of using it. They were only good at using certain tools or resources and this was supported by Rosnaini and Mohd Arif (2010, as cited in Moganashwari & Parilah, 2013) that only a small number of teachers were very good in ICT. Thus, this was likewise to this study. This could be due to the constraints in terms of the teachers' perceptions and issues or challenges of Frog VLE which would be discussed in the subsequent sections.

Table 3. Level of Knowledge of Frog VLE Dimensions

Dimension	Mean	SD	Level
Creating	2.51	.79	High
Assigning	2.68	.82	High
Using	2.56	.77	High
Overall Level of Knowledge of Frog VLE	2.59	.77	High

1=No competence, 2=Little competence, 3=Moderate competence, 4=Much competence

RQ2: What are the English language teachers' perceptions towards the usage of Frog VLE in terms of its usefulness, its ease of use, and motivating students?

The quantitative findings in Table 4 revealed that the teachers had high level of perception in Frog VLE usefulness compared to the ease of use and students' motivation with the mean score of 3.53 (SD=0.62). This finding seemed to be aligned with Ghavifekr and Ibrahim (2015) that most teachers were aware that ICT was very useful to improve teaching. Most of the teachers believed that using Frog VLE would enhance the job performance in the item "*I have never seen Frog VLE being used as an educational tool" (M=3.95, SD=0.91). Since this was a reversed score item, the teachers perceived that Frog VLE was used as an educational tool. This perhaps that English language teachers knew that Frog VLE was useful to English lesson and it was a tool in education as it caters to students' multiple intelligences strengths. On the other hand, ease of use and students' motivation obtained the same mean score 3.40 (SD=0.54 and 0.64) respectively. The teachers seemed to have moderate perception of Frog VLE in Frog VLE ease of use and students' motivation. The teachers perceived the highest that Frog VLE created an interest in learning (M=3.69, SD=0.78). The reason for this could be because Frog VLE has plethora of tools and resources. Moreover,

today's generation is closely related to digital media in their lives. Hence, when Frog VLE is relevant to their lives, they would feel interested to learn as supported by Keller (1987). This was also proven to be true by Arumugam and Abdul Halim (2013) as they found out that the Malaysian secondary school teachers agreed that technologies increased students' interest in learning.

Table 4. Perception of Frog VLE Dimensions

Dimension	Mean	SD	Level
Usefulness	3.53	.62	High
Ease of Use	3.40	.54	Moderate
Students' Motivation	3.40	.64	Moderate
Overall Perception	3.44	.56	Moderate

1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree

RQ3: What are the English language teachers' issues or challenges when using Frog VLE in English lesson?

The findings highlighted that the teachers had the highest level of issue in the First-Order Issues (M=3.08, SD=0.70) compared to Second-Order Issues (M=2.88, SD=0.88) (refer to Table 5). First-order issues were identified as the external factors of Frog VLE like limited access to computer, lack of training, and technical support. Meanwhile, second-order issues were identified as internal factors within an individual like teachers' knowledge, attitude, beliefs, and perception. Hence, the findings showed that the teachers had the highest level of issues with the external factors; first-order issues or challenges.

This finding was paralleled to a study conducted by Siti Nazuar (2014) who revealed that the lack of technology facilities was the main reason teachers did not integrate technology. Several studies had also shown internet access seemed to be the dominant problem when it came to integrating technology (Frog VLE) in Malaysian classroom (Ghavifekr & Ibrahim, 2015; Melor et. al, 2013; Mohamed Azmi, Zeehan, Fahad, Maryam, & Hisham, 2012; Nor Akma & Norizan, 2014; Shafiezul & Fariza, 2015; Siti Nazuar, 2014; Termit & Noorma, 2015). This has been the greatest hindrance when teachers integrated technology in the lesson. Arumugam and Abdul Halim (2013) attained the same result that teachers agreed that the obstacles were mainly lack of technical support, lack of professional development on how to integrate technology, lack of funding, and lack of time.

Table 5. Overall Mean Score of Items in Issues or Challenges in Frog VLE

No.	Dimension and Item	Mean	SD	Level
	Dimension 1: First-Order Issues			
8.	There is internet instability and reduced speed connectivity at school	3.60	1.01	High
4.	There is a lack of facilities at schools. E.g.: Chrome books and computers	3.48	1.13	Moderate
5.	There is a lack of technical support	3.48	1.02	Moderate
7.	There are flaws/instability of servers of Frog VLE	3.38	1.08	Moderate
9.	There is lack of maintenance on Frog VLE from YTL communication	3.33	1.00	Moderate
6.	There is a lack of ready-to-use contents and good practices examples of Frog VLE	3.17	1.15	Moderate
3.	There is insufficient covering of Wireless internet connection at home	3.14	1.28	Moderate
10.	I do not get enough training to be skilled in using Frog VLE	3.14	1.03	Moderate
2.	I do not have Internet access at home.	2.12	1.04	Low
1.	I do not have a computer at home that I can use.	1.93	.75	Low
	Overall First-Order Issues Score	3.08	.70	Moderate
	Dimension 2: Second-Order Issues			
11.	I have limited knowledge on how to make full use of Frog VLE	3.05	.96	Moderate
15.	It is difficult to manage Frog VLE	3.00	1.15	Moderate
13.	I do not have time during school hours to use Frog VLE	2.95	1.23	Moderate
14.	I have limited understanding on how to integrate Frog VLE into teaching	2.86	1.12	Moderate
12.	Frog VLE is too hard and complicated to use.	2.52	.92	Moderate
	Overall Second-Order Issues Score	2.88	.88	Moderate

1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree

RQ4: What are the suggestions to overcome the issues or challenges that English language teachers face when using Frog VLE in English lesson?

Findings in Table 6 had shown that suggestions were proposed more in the organisational level than the individual level with the total frequency of 40 and the percentage of 87%. Meanwhile, the suggestions for the individual level had the frequency of six and the percentage of 13%. The second highest suggestion given by the teachers was to provide a stable server for the site to run smoothly (F=11, P=27.5%) and this seemed to be related with the main issue in Table 5 which was the instability of internet and reduced speed connectivity at school. Budhedeo (2016) supported this suggestion that government should ensure that schools and educational institutions are equipped with high quality of internet access.

The individual level for the suggestions to overcome issues or challenges of Frog VLE had five proposed ways. The highest number of suggestion was to learn and identify other ways to accept Frog VLE system (F=2, P=33.3%). Despite suggesting this way, it was not made clear what kind of way is suitable for the teachers and students to accept Frog VLE system. In addition, there was a paucity of research and studies done on the suggestion of ways at individual level. Hence, this section was not able to be supported

with any previous works.

Table 6. Suggestions to Overcome Issues or Challenges of Frog VLE

No.	Dimension and Item	Frequency	Percentage (%)
	Organisational Level		
1.	Give more training, support and resources (eg: module of Frog VLE)	12	30
2.	Provide a stable server for the site to run smoothly	11	27.5
3.	Supply enough computers at school (eg: netbooks, Chromebook, PC)	7	17.5
4.	Revert to traditional teaching	2	5
5.	Provide conducive environment	2	5
6.	Update and simplify Frog VLE interface	2	5
7.	Provide smartphone or Tab for students	2	5
8.	Make Frog VLE more accessible on the phone	1	2.5
9.	Vary materials in Frog VLE related to the curriculum	1	2.5
	Overall Organisational Level Total	40	100.0
	Individual Level		
1.	Learn and identify other ways to accept Frog VLE system	2	33.3
2.	Search for information of Frog VLE in Google	1	16.7
3.	Make extra time to learn and use in class	1	16.7
4.	Add more out of school time exposure of Frog VLE	1	16.7
5.	Improve computer skills	1	16.7
	Overall Individual Level Total	6	100.0

*This totals 46 rather than 42 because a few respondents provided more than one answer

CONCLUSION

Frog VLE has the advantages to improve and transform teaching and learning in the classroom. Khine (2006) asserted that it gives "flexibility for both teacher and student" (p. 183). She then affirmed that it has "plethora of tools that are built in the system" and will provide a dynamic learning environment with ample support to make sure learning objectives are achieved. Using ICT in education is a methodology that is seen as a need in the global world today. Nonetheless, in order to achieve the maximum usage of Frog VLE in English lesson, support and contributions are needed from MOE to teachers.

Based on the responses given by the respondents, majority of them viewed Frog VLE positively and agreed that it is useful in students' learning even though a lot of improvements have to be carried out by the MOE, State Education Department (JPN), and schools since majority of the challenges were in term of first-order issues like limited access to computer and internet and lack of training which ultimately impacted the use of Frog VLE amongst the teachers. Thus it is hoped, the results from this study could contribute to the betterment of Malaysian education system, regarding Frog VLE

integration in the teaching of English language amongst school teachers in Malaysia.

REFERENCES

Abdirahman, A. A., Nor Hidayati, Z., & Ahmed Hussein, E. (n.d.). An Evaluation of Virtual Learning Environment Readiness in Higher Education Institutions (HEIs). Journal of Information Systems Research and Innovation, 1(4), 86-94.

Albirini, A. (2006). Teachers' attitudes toward information and communication technologies: the case of Syrian EFL teachers. Computers & Education, 47(4), 373-398. doi:10.1016/j.compedu.2004.10.013

Arumugam, R., & Abdul Halim, M. (2013). Issues of ICT Usage among Malaysian Secondary School English Teachers. English Language Teaching, 6(9), 74-82. doi:10.5539/elt.v6n9p74

Budhedeo, S. H. (2016). Issues And Challenges in Bringing ICT Enabled Education To Rural India. International Journal Of Scientific Research And Education, 4(1), 4759-4766. doi:10.18535/ijsre/v4i01.01

Chipps, J., Kerr, J., Brysiewicz, P., & Walters, F. (2015). A Survey of University Students' Perceptions of Learning Management Systems in a Low-Resource Setting Using a Technology Acceptance Model. CIN: Computers, Informatics, Nursing, 33(2), 71-77. doi:10.1097/cin.0000000000000123

Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. MIS Quarterly, 13 (3), 319-340.

Fernando, F. (2016, November 1). PAC wants review of RM4b 1BestariNet project. New Straits Times Online. Retrieved from http://www.nst.com.my/news/2016/11/184917/pac-wants-review-rm4b-1bestarinet-project

Fisher, R. (2005). Teaching Children to Learn. Cheltenham: Nelson Thornes Ltd.

Fose, L. E. (n.d.). Exploring Technology: To Address Student Multiple Intelligences and Learning Styles. Retrieved from ITS Technology & Learning Services, Cal Poly State University, San Luis Obispo website: https://web.calpoly.edu/~lfose/articles/Exploring_Technology.pdf

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2016). How to design and evaluate research in education (9th ed.). New York: McGraw-Hill.

Frog Asia. (2016). Frog VLE | FrogAsia Sdn Bhd. Retrieved from https://frogasia.com/en/frog-vle/

Ghavifekr, S., & Ibrahim, M. S. (2015). Effectiveness of ICT Integration in Malaysian Schools: A Quantitative Analysis. International Research Journal for Quality in Education, 2(8), 1-12.

Jones, A. J. (2002, September). Annual Conference of the British Educational Research Association, University of Exeter, England. Paper presented at British Educational Research Association, University of Exeter, England. Retrieved from http://www.leeds.ac.uk/educol/documents/00002496.doc

Keller, J. M. (1987). Strategies for stimulating the motivation to learn. Performance + Instruction, 26(8), 1-7. doi:10.1002/pfi.4160260802

Khine, M. S. (Ed.). (2006). Teaching with Technology: Strategies for Engaging Learners. Jurong: Prentice Hall Pearson Education South Asia Pte Ltd.

Kunjal, B. M. (2015). The Role of Multiple Intelligence in E-Learning. International Journal for Scientific Research & Development, 3(5), 1076-1081. Retrieved from https://www.researchgate.net/publication/281550248

Lee, C. (2016, February 14). Learning beyond the classroom. The Star Online. Retrieved from http://www.thestar.com.my/news/education/2016/02/14/learning-beyond-the-classroom/

Melor, M. Y., Norazah, N., Hadi, S., Choo, H. S., & Mohamed, A. E. (2013). Pros and Cons of Using ICT in Teaching ESL Reading and Writing. International Education Studies, 6(7), 119-130. doi:10.5539/ies.v6n7p119

Ministry of Education, (2012). Preliminary report - executive summary: Malaysia education blueprint 2013-2025

Moganashwari, K., & Parilah, M. S. (2013). Knowledge, Attitude and Use of ICT Among ESL Teachers. GSE Journal of Education, 1(1), 185-199
.

Mohamed Azmi, H., Zeehan, S. I., Fahad, S., Maryam, F., & Hisham, A. (2012). Assessment Of Students' Perceptions Towards E-Learning Management System (E-LMS) In A Malaysian Pharmacy School: A Descriptive Study. Malaysian Journal of Public Health Medicine, 12(1), 14-20.

Nor Akma, M., & Norizan, A. R. (2014). The Use of 1Malaysia Netbook in English Language Learning. Procedia - Social and Behavioral Sciences, 118, 302-309. doi:10.1016/j.sbspro.2014.02.041

Nor Fadzleen, S., Halina, M. D., & Haliza, Z. (2013). Derivation for design of Virtual Learning Environment (VLE) framework for Malaysian schools. 2013 International Conference on Research and Innovation in Information Systems (ICRIIS). doi:10.1109/icriis.2013.6716772

Peterson, R. A. (2000). Constructing effective questionnaires. Thousand Oaks: Sage Publications.

Prensky, M. (2001). Digital Natives, Digital Immigrants. On the Horizon, 9(5), 1-6. doi:10.1108/10748120110424816

Shahfiezul, S., & Fariza, K. (2015). Persekitaran Pembelajaran Maya Frog (VLE-FROG) Di Sekolah-Sekolah Di Malaysia: Pelaksanaan Dan Cabaran. Paper presented at Prosiding Seminar Kebangsaan Pendidikan Negara Kali Ke-5, Malaysia.

Siaw, N. H., & Agatha, F. U. (2015). A Pilot Study on Factors Affecting the Use of Frog Virtual Learning Environment. Jurnal Penyelidikan IPG KBL, 12, 1-17.

Siti Nazuar, S. (2014). Barriers influencing teacher's technology integration in their teaching practice. Australian Journal of Basic and Applied Sciences, 8(23), 352-358.

Termit, K., & Noorma, H. (2015). Teachers' Readiness to Utilize Frog VLE: A Case Study of a Malaysian Secondary School. British Journal of Education, Society & Behavioural Science, 5(1), 20-29. doi:10.9734/bjesbs/2015/11965

The Design of Team Formation System - A Coordination With The Perspectives of Delone and Mclean IS Success Model

Safura Adeela Sukiman, Puteri Nur Hidayah Kamaludin

Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Cawangan Johor,Kampus Segamat, 85000 Segamat, Johor, Malaysia safur185@uitm.edu.my
Academy of Language Studies, Universiti Teknologi MARA Cawangan Johor, Kampus Segamat, 85000 Segamat, Johor, Malaysia puteri523@uitm.edu.my

Abstract: Instructors must constantly think of more innovative teaching and learning techniques to ensure that the graduates they produce are in line with the changing needs of the industry. One such technique is project- based learning; the learning technique in which students are divided into smaller teams. From previous researches, team formation using personality traits was seen as more appropriate to form an ideal and balanced team. To do so, students must answer questions that will be analysed and based on the analysis, their personality traits are identified and incorporated into teams of various ideal personality traits. Problem occurs as this process is seen as a daunting task for the instructors. The preparation of questions, analysis and team assignment are being carried out manually without the help of a system-based platform. Thus, the development of team formation system is a better way to facilitate the manual process. But before the development begins, the design prototype should be carefully planned to ensure that no delays of time and more cost will be incurred. As such, this paper is written to study and produce a prototype design of a team formation system in accordance with the well-known Information System (IS) Model; the Delone and Mclean. The methodology for constructing the design prototype is divided into three steps: 1) Exploratory, 2) Design and 3) Coordination. To increase its efficiency, the produced design prototype also includes an algorithm to automate the team formation process.

Keywords: *Delone and Mclean, Design prototyping, Project-based learning, Team formation*

INTRODUCTION

Producing dynamic and quality graduates is a never-ending issue to be discussed. With higher expectations from the industries today, coupled with the rapid growth of new inventions and technologies, has challenged the instructors in higher learning institutions to constantly think of more innovative teaching and learning techniques. This is to ensure that the graduates they produce are truly appropriate with the ever changing requirements from the industries. One of the teaching and learning techniques is project-based learning, a technique in which students are divided into smaller teams, typically between 3 to 5 students. Using this technique however, the main problem that is often overlooked is the imbalance among team members. Duhigg (2016) noted that a tradition with unwritten rules which usually referred as group norms becomes the foundation to form teams among the students. With that tradition in hand, students simply use social relations as the only criteria in choosing their teammates (Srba & Bielikova, 2014). This has made students of minorities with a weak social background becoming the parasites in a team. Hence, according to Sherstyuk, Olekh, & Kolesnikova, 2016, students will face difficulties to constructively cope with the roles that they have been assigned and therefore influence the evaluation of the project as a team. In consequence to that, previous researches have emerged with the formation of teams using personality traits as an alternative in producing an ideal and balanced team. One of them is Myers Briggs Type Indicator (MBTI) that have been in existence since 1943. According to Bayne (1997) the popularity of using MBTI in team formation still holds strong due to its relevancy especially in education, team development and group functioning. Apart from the MBTI, several other personality traits are also identified; Six Thinking Hats (6-Hats) that has been reinvented by Dr. Edward de Bono (McAleer, 2014) and Five-Factor Theory of Personality that emphasized on Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness (McCrae & Costa, 1999). To group the students into one balanced team, each of them need to answer a few questions first before they are placed under one group once the instructors have finished analysing their answers. Here, it can be seen that the implementation is conducted manually by the instructors. The instructors are the one who prepare the questions, distribute them, analyze them and based on the analysis, they are also the ones who place the students with various ideal personality traits into one team. Obviously, it becomes a daunting task for

the instructors and making some of them decided to not continue to put the control to form teams solely in the hands of the students. Parasites among students in a team are difficult to eliminate. Therefore, the development of

team formation system is seen as a better way to streamline the manual process, reducing the burden on instructors and thus, enable students to have their ideal team as early as the first week of the semester.

To develop the team formation system, the phases in System Development Life Cycle (SDLC) Model can be followed as this model has been extensively used by most researchers. This SDLC Model generally consists of 4 phases and it highlights that thorough design must be carefully planned prior to the implementation (coding) phase. Ragunath, Velmourougan, Davachelvan, Kayalvizhi & Ravimohan (2010) highlight that this is to realise projects that can be completed within a set timeframe by eliminating any unseen expenses which occur due to conflicts. Thus, with the intention to develop a team formation system without any interruption and further obstacles, this research is conducted to study and produce a prototype design of a team formation system that is in accordance with the well-known Information System (IS) Model; the Delone and Mclean. The author put into center the Delone and Mclean Model as this model has been kept updated accordingly by its own creators. This can be seen when service quality is added as the third dimension apart from the original two dimensions; systems quality and information quality that already existed within the original model (Delone & McLean, 2003). The following sections in this paper are organised as follows: 2) Background of Study, 3) Methodology, 4) Findings and Discussions, and 5) Conclusion and Future Work.

BACKGROUND OF STUDY

In this section, various methods of team formation using personality traits in project-based learning are explored. Once the characteristics of each personality trait in each method have been understood, the importance of having a well-planned design prototype prior to the system development is studied. Since a well-planned design prototype must also be carefully aligned with IS Success Model, the significance of selecting the Delone and Mclean Model is being discovered by the author.

A. Team Formation Using Personality Traits in Project-based Learning

The foundation for an effective project-based learning is held by the formation of an ideal and balanced team. Ideal and balanced here refers to the presence of team members with variety of personality traits. With such diversity, they each highlight their own strengths and cover any weaknesses that the other team members have in completing the assigned tasks. In line with the innovation in education, there have been various ways to form teams using personality traits. MBTI, 6-Hats and Five-Factor Theory of Personality are some of the well-known methods that have been widely used until today. The brief concepts, evaluation tools for traits identification and balance of personality that each team should have by using the MBTI and 6-Hats methods are further explained in Table 1.

Table 1. Concepts, Evaluations, and Balanced Personality in a Team Using The MBTI and 6-Hats Method

	MBTI	6-Hats
Brief concept	The personality traits are categorised into four big families; attitudes, psychological perception, action decisions and mental functions. In each big family lies more detailed traits as listed below: a) Attitudes | Extraversion (E) | friendly & outgoing | Introversion (I) - quiet & reflective b) Psychological perception | Sensing (S) | being direct through factual senses | Intuition (N) | express subjective perceptions with more creative sights c) Action decisions | Thinking (T) | actions are decided through logical and rational conclusions	The categorization of personality is illustrated through the use of six hat colors; white, red, black, yellow, green and blue. The characteristics for each hat color are briefly described as below: a) White | well-versed in facts and numbers, but have very little tolerance in emotions. People sometimes call them the computers. b) Red | they are the opposite of white hat, where emotions and feelings are always in their mind. However, people with white hat usually look at only the bright sides of things, making them often referred to as emotions-positive. c) Black | this personality also relates to emotions and feelings like the red hat but, they are very often look at the negative or dark sides of things
	| Feeling (F) | actions are decided through personal experience and others' personal opinions d) Mental functions | Judging (J) | have structured plans and decisions in mind prior to implementation | Perceiving (P) | Open-minded and likes to be uncertain and indecisive prior to implementation	especially during the brainstorming session. d) Yellow | yellow color that resembles the color of the sun symbolize the optimism and positive thoughts. People who wear this hat color always sees the positive sides in making judgements. e) Green | creative-minded person who have passion to endlessly derive out new ideas, new inventions, new techniques and etc. f) Blue | a controller who likes to organize all other hats. Due to their nature as controller, they are the ones who define the problems and determine everybody's tasks.
Evaluation tool to identify the students' traits	Using the 36 questions test "Keirsey Temperament Sorter"	Using the 6HTFS instrument with 30 questions in it
Balance of personality in each team	An ideal and balanced team must consist of: An extrovert A judger A perceiver A thinker A feeler	An ideal and balanced team must consist of: A green hat wearer A yellow hat wearer A black hat wearer A blue hat wearer

References : Waite & McKinney (2018), De Bono (2017), Sukiman, Rahman, Bakar & Suhaimi (2018)

Apart from the two methods explained earlier, the Five-Factor Theory of Personality is also the commonly used method by instructors to team-up their students. The Five-Factor Theory of Personality is also known as Five-Factor Model (FFM), and it accesses the students' personality according to five different dimensions as illustrated in Table 2.

Table 2. Five-Dimensional Concepts and Personality Evaluation Using The FFM Method

Dimension #1	Neuroticism	Most of the time, people who strongly possess this trait have the negative emotions circling their mind, making emotional stability quite difficult to accomplish.
Dimension #2	Extraversion	Extraversion people are energetic, confident and talkative and therefore, they have very less issues in making new friends and to socialize with anyone anywhere.
Dimension #3	Openness	Suitable with the word *open*, people with this trait are open-minded people that always considers all kind of reasons and justifications before reaching the ultimate decisions.
Dimension #4	Agreeableness	People with strong agreeableness trait is the easy-going person who always provides full cooperation to their superiors or subordinates.
Dimension #5	Conscientiousness	The words self-discipline, self-organized, dedicated, determined and hardworking are sturdily connected to the people with strong conscientiousness trait. They prefer all their activities to be planned ahead and impulsive acts should never exist according to them.
Evaluation tool to identify the students' traits		An assessment with 240 questions (the longer version) or an assessment with 60 questions (the shorter version)

Reference: Clinebell & Stecher (2003)

B. The Importance of Design Prototypes and Its Relations With the Delone and Mclean IS Success Model

Design sketching prior to the implementation process is not something new in the domain of system development. As the terms credit and debit are acquainted to banking professionals, so is the concept of design before implementation for Information, Communication and Technology (ICT) professionals. Design prototypes are occasionally referred to as blueprints, or virtual prototyping by some ICT professionals. d'Ippolito (2014) added that the provision of design prototypes prior to system development are important for providing problem-solving solutions along with an attachment of specific reasoning. Design prototypes must capture not only the typical requirements of users, but also the tailored needs that often relate to the

systematical, managerial, directional and environmental dimensions (Leiva, Maudet, Mackay & Beaudouin-Lafon (2019); bin Ahlan (2013).

According to Dwivedi, Wastell, Laumer, Henriksen, Myers, Bunker & Srivastava (2015), in any ICT projects, there are times where its implementation is assessed as a success by the developers, but on the other hand, evaluated as a failure by the other groups such as the top managers. In this regard, coordinating the design prototypes with the perspectives of IS Success Model is extremely helpful in avoiding such unwelcome scenarios. The author has chosen the Delone and Mclean Model to be its comprehensive guide, like a lighthouse to a stray sailor, in producing a competent design prototype for this study. The author choses this model not merely because of its popularity, but based on the fact that the creators of this model keep on updating their own model according to the revolution and current issues in system development.

According to DeLone & McLean (1992) and Al-Debei, Jalal & Al-Lozi (2013), the first version of Delone and Mclean's Success Model was introduced in 1992, with the aim of resolving differing opinions among stakeholders on how to measure system implementation success. Since then, many researchers have used this model as a comprehensive guide in measuring the success of their systems as well as the information circulation that occurs in the system. However, after a few years, systems usage were no longer solely focused on the day-to-day operations of an organisation. Systems have begun to be used as intermediaries between customers and organizations in various transactions. Looking at this scenario, coupled with the modifications suggested by researchers, triggered Delone and Mclean to do several adjustments to the first model. Fig. 1 shows the differences between the first and the modified models of Delone and Mclean IS Success Model.

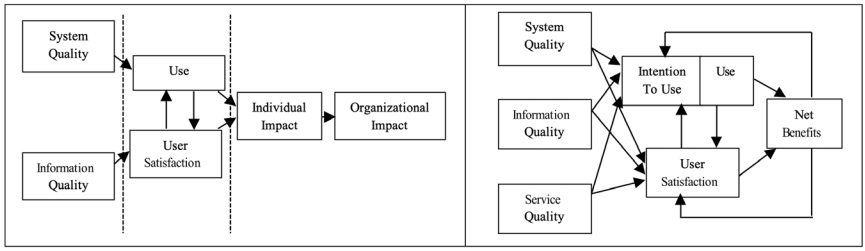


Fig. 1. The First and The Modified Version of Delone and Mclean IS Success Model

METHODOLOGY

This study was carried out in three main phases, as described below:

Phase I: Exploratory phase in which the existing literature pertained to "project-based learning", "team/group/team formation/group formation/ team design/group design using personality features", "design construction/ design prototype in the SDLC Model" and "the importance/relevance/ implications of the Delone and Mclean Model in Information Systems" has been studied. To ensure that all literature is up to date and consistent with the world of higher education in the field of ICT, the author has made it clear that the period of past literature should not be below 2014 unless it is a genuine theory written as a chapter in a book. All keywords used were within the scope of the Information Systems. IEEE Xplore, Web of Science (WoS), Scopus and ACM Digital Library were among the online databases used by the author in carrying out this research.

Phase II: Design phase where the recommended Graphical User Interfaces (GUIs) of the Team Formation System were drawn. Designs took into account users' ICT background as some of them may have limited experience in adapting systems in their teaching and learning environments. There were fields in gray to indicate that no edits were required as the data was consistently extracted from the datastore. In addition, the principles contained in the handbook for user interface design (Rosenblatt, 2013) were applied to guarantee system user friendliness and in turn, enhance the system's acceptance among users and their tendencies to continuously

implement the system especially in project-based learning.

Phase III: Coordination phase. Strategically, the effectiveness of a system is seen in terms of its continuous use usually over a period of 3-5 years without any major modification that could result in a sudden increase of cost and time. Thus, with the aim to prevent any misapplication among users towards the to-be built Team Formation System, this phase of coordination revolved around mapping the features that were drawn during the design phase to the elements in the well established Delone and Mclean IS Success Model.

FINDINGS AND DISCUSSIONS

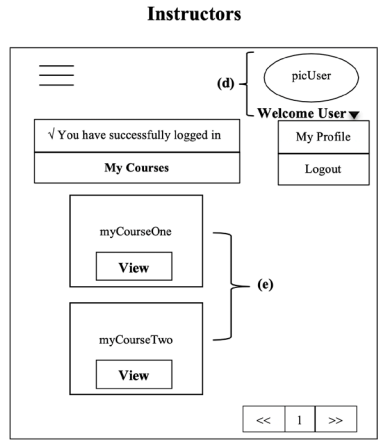


Fig. 2. The Homepage Once Instructors Have Successfully Login

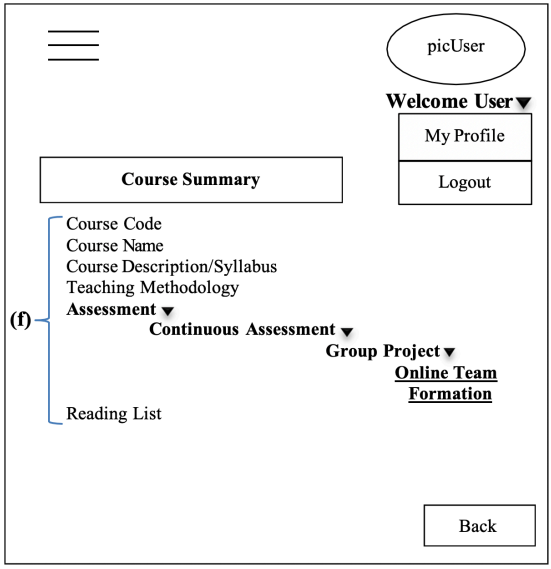


Fig. 3. Course Summary Displayed Once The View Button Is Clicked By Instructors

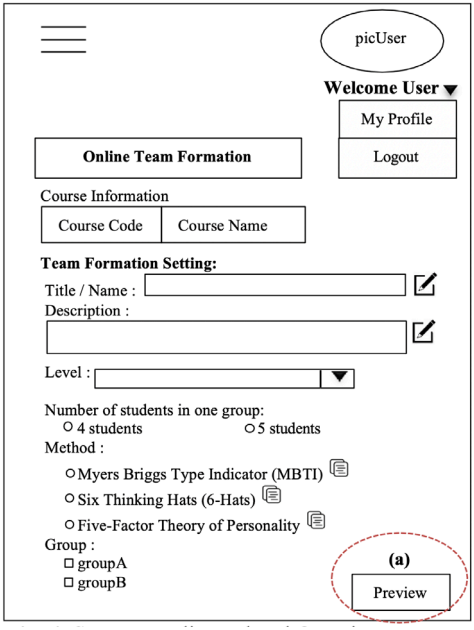


Fig. 4. Set Personality Related Questions

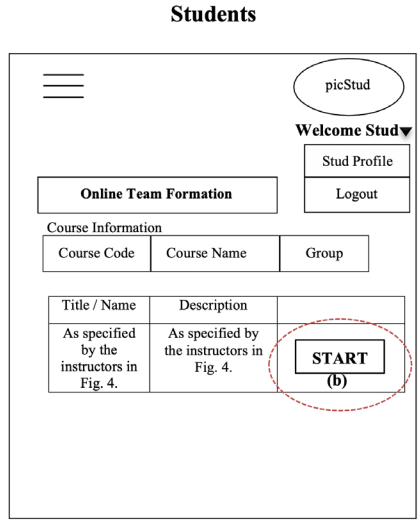


Fig. 5. The Page Where Students May Start Answering The Personality Questions According To The Time and Date Set By Instructors

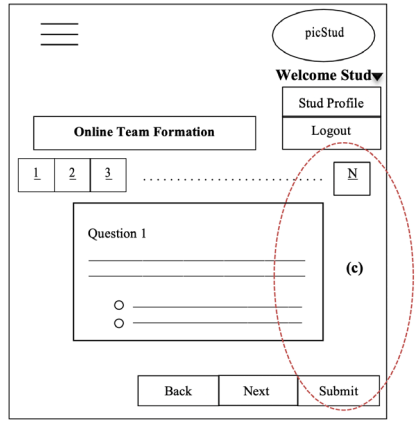


Fig. 6. List Of All Personality Questions

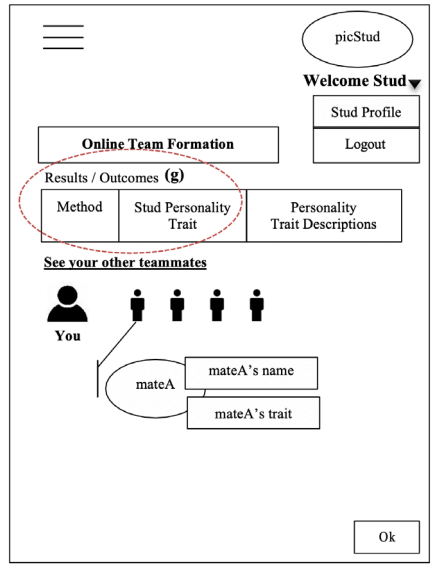


Fig. 7. Results Of The Personality Trait

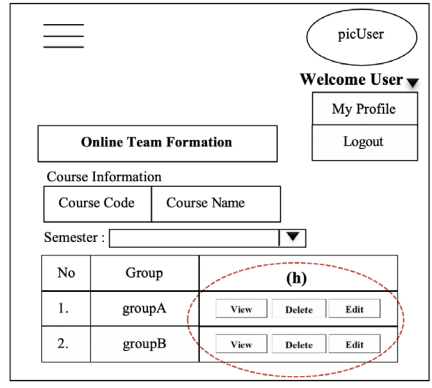


Fig. 8. The Access Control Granted For Instructors

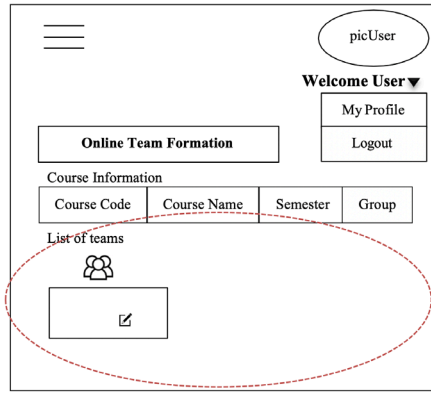
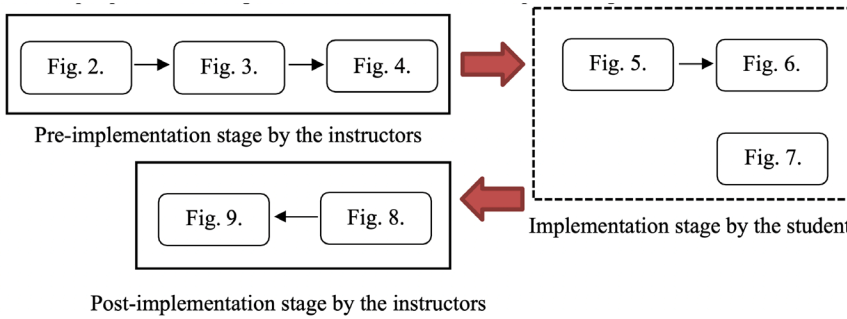


Fig. 9. Summary Of Traits In A Group

Fig. 2. through Fig. 9. shows the design prototype for the team formation system designed according to Delone and Mclean's perspectives. All diagrams can be divided into three important stages as shown below:



The pre-implementation stage is used entirely by the instructors for the purpose of preparing the questions. Here, options are given to instructors where they can select appropriate personality traits and limit the number of students in a group. Next, the implementation stage takes place. This stage requires the students to answer all the questions and at the end of this stage, the students will learn about their own personality and which team they belong to. Because the first answer is usually the best answer to describe the students' behaviour, students can only answer the question once. The post-implementation stage concludes the design prototype of this team formation system. This stage focusses on reporting where instructors can see all the teams that have been formed in the class and in addition, instructors can

insert names for each team to facilitate them in group assessments. For the purpose of coordinating the prototype design with the perspectives of the Delone and Mclean Model, Table 3 goes into greater detail.

Table 3. Coordination of Prototype Design With Delone and Mclean IS Success Model Perspectives

Perspective of Delone and Mclean Model	Figure	Label	Explanation
System Quality	Overview		Adaptability, availability, reliability, response time and usability are the five success metrics listed by Delone and Mclean under this perspective. It holds that the systems must be embedded with usability functionality so that even users with limited ICT backgrounds can adapt to the system without too much hassle.
	Fig. 4.	(a)	The preview function is embedded with the aim for the instructors to see the usability and reliability of the questions generated before granting the access for the students to answer. In addition, instructors are allowed to control the time, date and duration for students to answer the generated questions.
	Fig. 5.	(b)	The start function is closely related to the time, date and duration that the instructor has set. This means that students will only be able to answer questions generated at the date and time specified by the instructors.
	Fig. 6.	(c)	In order to know the right personality, students need to answer all questions. Accordingly, the submit function will only be activated once students have completed answering all the questions.
Information Quality	Overview		Data that is conveyed to provide useful insight is called information. In any system, completeness, ease of understanding, personalization, relevance, and security are the success metrics acknowledged by Delone and Mclean. Programmers must ensure that the information contained in a system is relevant and personalized according to one's position in the organization.
	Fig. 2.	(d)	This section contains information related to the instructor's profile. To maintain confidentiality of information, all information is extracted only from the university database. In addition, there are options for instructors to update their information such as new passwords and telephone numbers. Once the information is updated, the university's database is also automatically updated with only the latest instructor information.
	Fig. 3.	(e)	The information in this section is extracted from the university database. The way information is processed and updated is similar to information processing in label (d). The only difference is that it provides information on the subject taught by the instructor for the current semester.
	Fig. 7.	(f)	Fig. 3 shows information regarding the subject when the View button as shown in Fig. 2 is clicked by the instructor. Again, all information on the subject is valid and genuine as it is extracted from the university database. For the purpose of facilitating understanding, the link to team formation system is included as a subset in the assessment section as team formation is required for evaluation for group work projects that are part of the continuous assessment.
	Fig. 7.	(g)	This is a very crucial part of the design of the team formation system. Apart from needing students to get precise data on their personality traits, ideal groupings must also be generated. Therefore, the clustering algorithm is recommended to get ideal groupings as students are clustered in smaller teams with various ideal personality traits using the detailed score specified in the algorithm (Sadeghi, H., & Kardan, A. A., 2016)
Service Quality	Overview		Quality of service encompasses the overall support that the system provides to users, and thus responsiveness is one of the success metrics in measuring the success of a system development.
	Fig. 8.	(h)	The system provides responsive control to the instructors where by using these three buttons, they are allowed to 1) view various types of personality traits for all students in any given group, 2) to erase students' records when necessary, for instance, students have graduated and, 3) to change the date, time and duration for students to answer questions that have been generated.
	Fig. 9.	(i)	With this system, instructors have a complete understanding of where they have access to see how balanced teams are formed using the aforementioned cluster algorithm. In addition, they get access to insert the team's name to facilitate them during the evaluation process.

With the coordination described above, it is anticipated that the team formation system that will be developed using the design prototype generated through this research, has net benefits that will make the system highly scalable; the to-be developed system will be able to sustain strategically for longer period without the need for any regular updates. The net benefits of task productivity can be clearly seen as the instructors' valuable time can be saved as they no longer have to manually prepare all questions about personality traits, analyse the questions, and therefore they can set aside time for other educational purposes such as subject consultation. Along with easy-to-learn embedded system functions, it motivates instructors to continue adopting the system, making task innovation another net benefit as the preparation of manual questions regarding personality traits is no longer needed.

CONCLUSION AND FUTURE WORK

In conclusion, team formation according to different personality traits will give tremendous benefits to organisation specifically. This is because different types of people with different personality qualities will develop more effective teams. Many organisations will value teams which are build on diversity and therefore, it is imperical that instructors to employ this system to create effectual and operational teams. A team composed with a diversity of personality traits will generate higher success for a given assignment and this can be achieved with this system as it will help instructor to sort out the best suited team.

ACKNOWLEDGEMENT

The author gratefully acknowledge the support of Universiti Teknologi MARA and Institute of Research Management and Innovation in providing the ARAS Fund (Project Number: 600-IRMI/DANA 5/3/ARAS (0191/2016)) research grant. The author also thanked Ts. Dr. Rashidah Mokhtar of the Universiti Teknologi MARA Cawangan Johor for her constructive assistance, support and comments in improving the writing of this research paper.

REFERENCES

Al-Debei, M. M., Jalal, D., & Al-Lozi, E. (2013). Measuring web portals success: a respecification and validation of the DeLone and McLean information systems success model. International Journal of Business Information Systems, 14(1), 96-133.

Bayne, R. (1997). The Myers-Briggs Type Indicator: A critical review and practical guide. Nelson Thornes.

bin Ahlan, A. R. (2013, November). A coherent framework for understanding critical success factors of ICT project environment. In 2013 International Conference on Research and Innovation in Information Systems (ICRIIS) (pp. 342-347). IEEE.

Clinebell, S., & Stecher, M. (2003). Teaching Teams to be Teams: An Exercise Using the Myers-Briggs® Type Indicator and the Five-Factor Personality Traits—. Journal of Management Education, 27(3), 362-383.

De Bono, E. (2017). Six thinking hats. Penguin UK.

DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. Information systems research, 3(1), 60-95.

Delone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten- year update. Journal of management information systems, 19(4), 9-30.

Dwivedi, Y. K., Wastell, D., Laumer, S., Henriksen, H. Z., Myers, M. D., Bunker, D., ... & Srivastava, S. C. (2015). Research on information systems failures and successes: Status update and future directions. Information Systems Frontiers, 17(1), 143-157.

d'Ippolito, B. (2014). The importance of design for firms' competitiveness: a review of the literature. Technovation, forhcoming.

Duhigg, C. (2016). What Google learned from its quest to build the perfect team. The New York Times Magazine, 26, 2016.

Leiva, G., Maudet, N., Mackay, W., & Beaudouin-Lafon, M. (2019). Enact: Reducing Designer–Developer Breakdowns When Prototyping Custom Interactions. ACM Transactions on Computer-Human Interaction (TOCHI), 26(3), 19.

McAleer, F. (2014). Develop Critical and Creative Thinking Skills: Put on Six Thinking Hats. Required Readings, 41.

McCrae, R. R., & Costa Jr, P. T. (1999). A five-factor theory of personality. Handbook of personality: Theory and research, 2(1999), 139-153.

Ragunath, P. K., Velmourougan, S., Davachelvan, P., Kayalvizhi, S., & Ravimohan, R. (2010). Evolving a new model (SDLC Model-2010) for software development life cycle (SDLC). International Journal of Computer Science and Network Security, 10(1), 112-119.

Rosenblatt, H. J. (2013). Systems analysis and design. Cengage Learning.

Sadeghi, H., & Kardan, A. A. (2016). Toward effective group formation in computer-supported collaborative learning. Interactive learning environments, 24(3), 382-395.

Sherstyuk, O., Olekh, T., & Kolesnikova, K. (2016). The research on role differentiation as a method of forming
the project team. Восточно-Европейский журнал передовых технологий, (2 (3)), 63-68.

Srba, I., & Bielikova, M. (2014). Dynamic group formation as an approach to collaborative learning support. IEEE transactions on learning technologies, 8(2), 173-186.

Sukiman, S. A., Rahman, M. A., Bakar, N. F. A., & Suhaimi, A. (2018). Construction of Constructive Guidelines Focusing on Planning Phase in System Development. Advanced Science Letters, 24(11), 8439-8443.

Waite, R., & McKinney, N. S. (2018). Personality Typology: Understanding Your Preferences and Striving for Team Effectiveness. ABNF Journal, 29(1).

Human Governance Approach in Building High Performing Learners

W. Mansor, B. N. Sheikh Rahimullah

Faculty of Electrical Engineering, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia
wahidah231@salam.uitm.edu.my
Computational Intelligence Detection RIG, PLS CORE, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia Universiti Kebangsaan Malaysia,

**Corresponding Author*

Abstract: Academic dishonesty and unethical behaviours such as cheating and plagiarism are obstacles to innovative and creative thinking and mastering the course materials. Recognition of human values and principles from the internal drivers can drive and motivate individuals to excel beyond expectation. Various programmes have been executed to encourage ethical student behaviour. However, the programmes are not an integral part of the course. This paper describes the method used to build consciousness at a deeper level in one of the Electronic Engineering courses for the purpose of producing high performing learners with good values. A strategy was developed where a mechanism was used to make the learners realize the correct way of sharing knowledge and the wrongdoings in academic that may become their habit and usual practice. Being human was stressed in the first lecture with the realization of the purpose of life and discussion on the code of conduct as a learner and effect of academic dishonesty on society. Student responses to Being Human Evaluation questionnaires allow suitable activities to be designed to enhance their knowledge and skills. The human governance approach has demonstrated a positive impact on the course outcomes.

Keywords: *Human governance, being human, God conscious, academic dishonesty, unethical behaviours.*

INTRODUCTION

Integrity and trustworthiness are the significant aspects of highly effective charismatic leadership (Bartholomew Craig & Custafson, 1998). Researches conducted by (Bartholomew Craig & Custafson, 1998; Sean et al., 2011) have shown that ethical, principled and wholesome behaviour of leaders lead to positive outcomes in the organisation and bring success to the leaders. One of the ways to shape or train individu to be an ethical person is through education. It is the role of higher learning instituition to produce graduates with good moral and values (Lim & Lee, 2016; Ahmad et al., 2015).

Human governance approach was proposed to be employed in organisation and institution of higher learning (IHL). Salleh and Ahmad (2009) suggested human governance to be a focus as a strategy to govern corporations. Hanapiyah et al. (2016) analysed the determinants of human governance and proposed the variables to be the spotlight by organisations to improve their employees. Ahmad et al. (2015) recommended the implementation of human governance in the management of IHL by first exploring the best way through research to produce effective leaders, team members and managers. Even though several reports have discussed the human governance in education, most are conceptual frameworks, an approach of human governance implementation in the classroom has not been reported. According to Salleh et al, (2009), human governance is people-centred, principle-based, and the best way to encourage excellent performance. It is the internal moral drive which can motivate individuals to excel and control them from executing unethical actions. Salleh and Ahmad (2012) proposed the human being roles and principles that governed them to be included in the accounting curriculum. Since the proposed ethics education model by Salleh and Ahmad (2012) is considered a framework and focussed for accounting, a more detailed model which is applicable to any programme has to be created. In the existing Electrical Engineering curriculum, the ethics topics are included in a few courses, however the contents are fully complete and comprehensive since the inclusion of the belief or core values is not incorporated (Salleh and Ahmad, 2012).

This paper describes human governance approach used in the classroom to enhance and encourage students' ethical behaviour. It is believed that the use of inner principles will help the students to avoid plagiarism and unethical

behaviour, produce original work and hence perform well in their studies.

METHOD

The human governance approach was implemented in the teaching of two groups of semester five students studying one of the electronic engineering courses. The total number of students involved in the work was fifty-five. The approach comprises several stages which include being human evaluation, Secret of Success talk, 'Teach Your Friend' training, remind student continually and finally monitoring students' behaviour as shown in Fig.1. In the first lecture, after discussing the course outline and introducing the outcome based education in the class, being human evaluation (BHE) was carried out. The evaluation was conducted online where all students in the class have to answer the questions created on Google form. They were allowed to answer the questions using the computer provided in the class or their mobile phones.

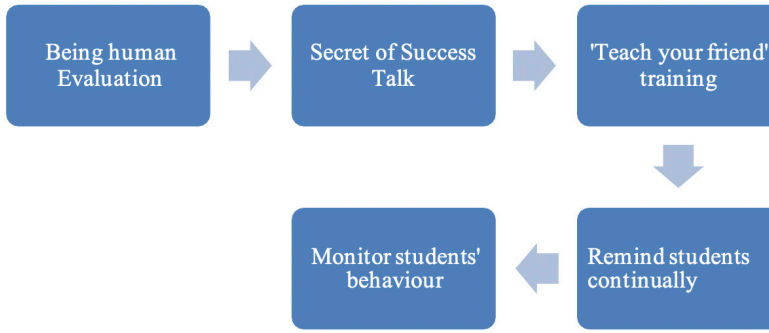


Fig. 1 Strategies in human governance approach.

The purpose of conducting this evaluation is to make the learners realize the correct way of sharing knowledge and the wrong doings in academic. There are six questions in the BHE online form. The first question was designed to check whether they have experience of cheating in the test or exam. The second question asked about their feeling when cheating in the exam or test and the reason for doing it. The third, fourth and fifth questions checked their integrity in solving the assignment and test questions by giving scenarios (see Fig. 2).

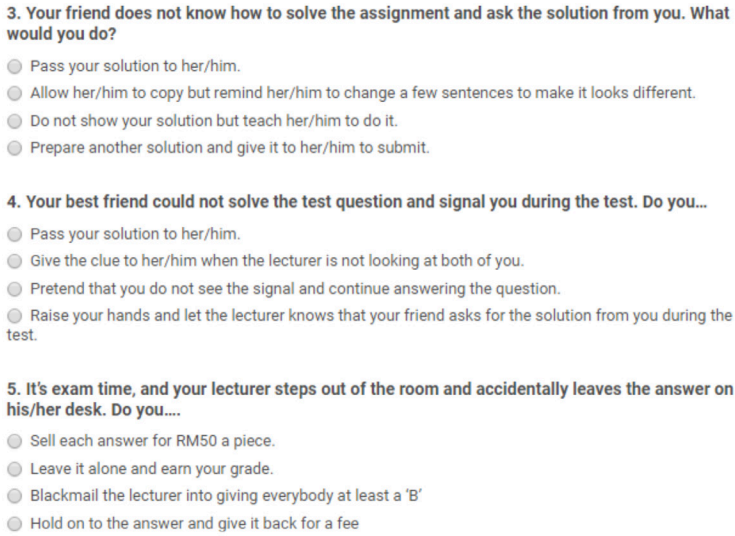


Fig. 2 Samples of BHE online questions

After the students completing the BHE online form, a talk on the secret of success was delivered for ten minutes with the aims to open the students' eyes on the correct way of learning and the importance of integrity in life. The contents of the talk include, the code of conduct as learner, ethics in project, the importance of ethics, the effect of academic dishonesty on oneself and the society, and the purpose of life. The students were introduced with the meaning of 'be human' which refers to actualize rightness or practicing ethics (Salleh et al, 2009; Bilal Philips, 2002). The discussion on this topic was carried out to build a conscience in them so that their internal values will judge, control their actions and prevent them from doing the wrong things, and to assist them to link the environment to their transcendental accountability.

The students were trained to teach their friends in every activity carried out in the classroom and laboratory. Peer to peer teaching was practiced during active learning where the good students were given a task to teach a group of students who could not solve the questions. This approach will make them see the correct way of helping their friends to understand the subject matter. They were reminded to 'be human' continually, for example during delivery of assignment and mini project tasks and before the quizzes and

tests started. Monitoring of students behaviour during each activity in the class was carried out to ensure the students engaged in the activity.
It is difficult to measure the effectiveness of the human governance approach. The students' performance based on the course outcomes and observation through out the activities were used to analyse the impact of the human governance approach. Table 1 shows the outcomes for the course and the key performance indicator (KPI) that the students have to achieve for all outcomes. The attainment of the course outcomes and the percentage of the students achieving the targeted level of the outcomes were measured using an online evaluation system called OBEET. The details on the measurement of the course outcomes can be found in Mansor et al, (2017).

CO	Course Outcome Statements	KPI
CO1	Analyze microprocessor based program and circuit designs.	65%
CO2	Design hardware and software interfacing.	65%
CO3	Demonstrate entrepreneurial attributes in solving engineering problem through innovation.	65%

Table 1 Course outcomes and the KPI

RESULTS AND DISCUSSION

The response from the BHE online questions give some information on the students' background, attitude and their thinking. The response serves as the basis for designing suitable activities that give them opportunity to enhance their skills and knowledge throughout the semester for the course. The talk on the 'Secret of Success' especially the 'The Purpose of Life' part has awakened the students on God consciousness and their transcendental accountability from the look in their eyes. The 'Teach Your Friend' training has given a positive change in the students behaviour. Observation during the activities in the class and laboratory has shown that the students are practicing peer-to-peer teaching in helping their friends to solve the problems. This indicates that the training has the potential to deviate their thinking from the usual mode of practice (wrong way) for some students and build strong work ethics. Reminding the students continually on the ethics also helps the students to enhance their ethical sensitivity and make them engage in ethical behavior.

The human governance approach has provided a positive impact on the students' performance for both groups. Figure 3 shows the score for the

students' ability of analyzing microprocessor based program and circuit designs (CO1), designing hardware and software interfacing (CO2) and demonstrating entrepreneurial attributes in solving engineering problem through innovation (CO3). Students in both groups have achieved score of above the targeted level which is more than 65% for CO1 and CO3. Different observation is found for CO2 between these groups. Group A students has managed to achieve good level for this ability whereas group B students are 2.5% below the targeted level. This shows that a few activities that have been carried out are not suitable to some of the group B students.

Percentage of Group A students achieving score of more than 50% for all course outcomes is more than 80%. For group B, 77% of the students has achieved score of more than 50% for CO1 and 100% of the students has attained the KPI for CO3. However, only 61% of the students managed to attain more than 50% score for CO2. The results indicate that the human governance approach is effective for enhancing the entrepreneurial and managerial skills of the students.

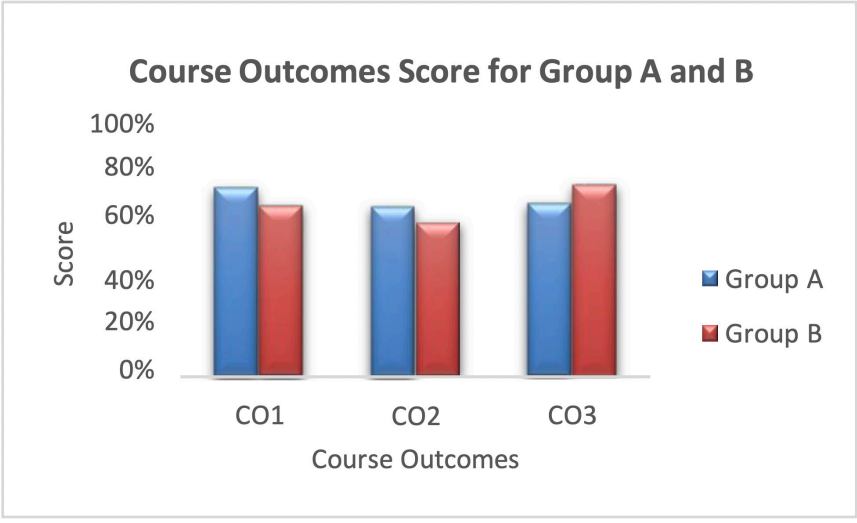


Fig. 3 Course outcomes attainment for two groups

CONCLUSION

Human Governance approach has been implemented in the teaching delivery and activities in the classroom. The student responses to BHE questionaires give some indications on students thinking which can be used to develop a strategy for enhancing and encouraging the ethical behaviour among them. The observations on the students' behaviour during classroom and laboratory activities show that the approach can bring the students' back to being human or build work ethics. The course outcomes attainment measured from two goups of students demonstrated that the approach has produced positive impact especially in enhancing the entrepreneurial and managerial skills.

ACKNOWLEDGEMENTS

This work was supported by Academic and Research Assimilation Scheme (ARAS), Malaysia (600- RMI/DANA 5/3/ARAS (7/2015). The authors would like to express their gratitude to Faculty of Electrical Engineering for providing equipment for this research, and to Universiti Teknologi MARA, Malaysia, for financial support.

REFERENCES

Ahmad I. F, Abdul Hamid N., Mohd Hamzah M. I (2015). Human Governance Management in Islamic Higher Education Institutions. Asian Journal of Management Sciences & Education. 4(3), 34-43.

Bartholomew Craig, S., & Custafson, B. (1998). Perceived Leader Integrity Scale: An Instrument For Assessing Employee Perceptions of Leader Integrity. Leadership Quarterly. 9(2), 127-145.

Bilal Philips, A. A. (2002). The Purpose of Creation. International Islamic Publishing House.

Hanapiyah, Z., Daud, S., Wan Abdullah, W. M. T. 2016). Human Governance Determinants. Proceedings of 73rd the IIER International Conference. 58-62.

Lim, G. N., & Lee M. S. (2016). Human Governance for Teaching at Higher Learning Institution in Malaysia.

Journal of Public Administration and Governance. 6(1), 1-5.

Mansor, W., Sheikh Rahimullah, B. N., Taib, M. N., Mohamad Zaini, N. Abdul Latip, M. F., Mahmud, A. R. (2017) "Effective Sampling-Based Assessment Method for Evaluating Electrical Engineering Programme Performance", Indonesian Journal of Electrical Engineering and Computer Science, 9 (2), 417-423.

Salleh, A. and Ahmad, A. (2009). Scientific Worldview of Accounting Ethics and Governance Education: The Right Footing of International Education Standard 4, But. Asian Academy of Management Journal. 17(1), 131–150.

Salleh, A. and Ahmad, A. (2009). Get Human Governance Right, Corporate Governance Will Ensue. The Malaysian Accountant. 3-6.

Salleh, A., Ahmad, A. and Kumar, N. (2009). Human Governance: A Neglected Matra for Continuous Performance Improvement. Performance Improvement. 48 (9), 26-30.

Sean, T. H, Bruce J. A. and Fred O. W. (2011). Relationships between Authentic Leadership, Moral Courage, and Ethical and Pro-Social Behaviors. Business Ethics Quarterly. 21(4). 555-578.

Student's Readiness for Internship in FPA: KM Readiness Model Approach

Nur Wajihah Mohd Nawi, Nur Nabila Huda binti Aziz, Syahrizan bin Sahlan, Farahida binti Zulkefli, Asmah Awal (Dr.)

Faculty of Plantation and Agrotechnology, UiTM Melaka (Kampus Jasin) 77300 Merlimau, Melaka.

Abstract: According to Academic Information Management System (AIMS) of UiTM, it is compulsory for undergraduates of each faculty under UiTM to undergo a minimum of 8 weeks industrial training before graduation. Industrial training programme is a part of university's curriculum that can give opportunity for students to get exposed in the real workplace and professional practice. The students would be supervised by professional personnel in the certain period based on respective universities. In addition, the students need to follow all the procedures set by the faculty in order to pass the industrial training programme. The assessment of the student's performance would be assessed by the industry during this period of practical training. An industrial training program provides the real working experience for the students and reflects actively the hands-on activities based on the theories learned in the classes. But, the readiness of the students before undergoing this practical training need to be identified. It is importance to reflect the best performance of the students during the internship programme. This paper discussed about the significant of industrial training programme that is practiced by Faculty of Plantation and Agrotechnology and the readiness level of the students before going on the internship programme. The readiness of the students was measured based on three different components which are motivation, knowledge and working skills. This paper is written based on primary data analysis with the questionnaires as the data collection method. It is revealed that the FPA students are moderately ready before going for an industrial training programme based on three sub-factors of KM Readiness which are motivation, knowledge and skills. As a conclusion, the respondents were having a good motivation level, but it is not sufficient for knowledge and skills. Thus, it was suggested that several knowledge and skills workshops should be introduced to the students as preparation for their internship programme to enhance their readiness so that they can meet the expections

of employers in the industry.
Keywords : *Industrial Training, Internship, KM Readiness Model, Motivation, Knowledge, Skills*

INTRODUCTION

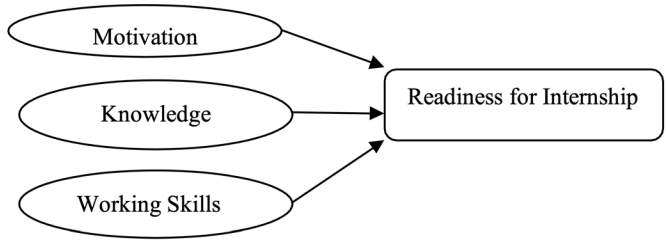
Recently, the unemployment rate for the Malaysian's graduates has been gradually increasing year by year. Until September 2019, the statistics illustrated that the numbers of unemployed graduates was 516,200 which was an increase of 2.2% from a year ago (The Star, 2019). There are several reasons of why the graduates are unable to find the job. One of the determinants for the graduates to be employed is through the internship program during their study period. An industrial training program provides the real working experience for the students and reflects actively the hands-on activities based on the theories learned in the classes. From the training program, the students can enhance their soft skills and competency level as a preparation before going into the job market. Currently, most of the students are incompetent especially in terms knowledge of the subject content and not well prepared before going through the industrial training which is totally opposite with the preferences of the industries. This research has been conducted to measure the readiness level of the students in Faculty of Plantation and Agrotechnology. KM Readiness Model has been used as a references in analyzing the results to measure the readiness level of students in for internship programme in FPA. Knowledge management (KM) readiness model is one of the measures that usually being used to analyse the knowledge level of the respondents towards certain subject matter. Knowledge management (KM) can also be defined as the process for acquiring, storing, diffusing and implementing both tacit and explicit knowledge inside and outside the organization's boundaries with the purpose of achieving corporate objectives in the most efficient manner (Magnier-Watanabe and Senoo, 2008). Knowledge Management (KM) can be easily understood by receptive attitudes of the members in an organization towards the efforts that will help to increase their knowledge. According to Farnaz Barzin Pour et, al. (2013) the key factors of KM model is knowledge structure, infrastructure and culture of the organization. JB Associates (2010), stated that there are several sub-factors of KM model which includes awareness,commitment, strategy, culture, knowledge application, skills and

motivation. The objectives of this research paper is to analyse the readiness level of the FPA students based on the components in 3 sub-factors in the Knowledge Management Readiness Model which were motivation, knowledge and working skills.

RESEARCH METHODOLOGY

This research has been using cultural questionnaires method to assess the KM (Knowledge Management) readiness of the respondents. According to Farnaz Barzin Pour et al. (2013), one of proposed methods in KM readiness assessment is OCI questionnaire. This questionnaire has been utilized by many organizations as an economic reliable tool. The questionnaires has been designed based on Likert Scale structure, consisting of the scale from 1-7. There were two types of scale measurement starts from 1 (very strongly disagree), 2 (strongly disagree), 3 (disagree), 4 (undecided), 5 (agree), 6 (strongly agree), 7 (very strongly agree). Another scale of measurement is multiple choice questions, which basically used to measure the knowledge level of the respondents. The questionnaire were divided into 3 different sections which are Section A (demographic information), Section B (Sub-Factors of KM Readiness Model – Motivation, Knowledge and Working Skills) and Part C (Dependent Variables – Readiness of the Respondents). There were two methods for the distribution of questionnaires, manually (using papers) and through electronic medium which is google forms. The respondents were from two different levels of programs which are AT110 (Diploma in Planting Industry Management) and AT220 (Bachelor (Hons.) Technology and Plantation Management. The questionnaires were distributed for two semester sessions Semester 2 (2017/2018) and (Semester 1 2018/2019) for each program Diploma (AT110) and Bachelor Degree(AT220). The total number of respondents for was 128 respondents from Semester 4 and 67 respondents from Semester 4 for AT110 and AT220 respectively. Convenience sampling method was used in this research study. The duration of the practical training for both programmes was 8 weeks which were done during their semester break on the Semester 2 and Semester 4 for AT110 programme, meanwhile, it is Semester 3 for AT220 programme.

2.1.1 Theoretical Framework



Sub-factors of KM Readiness Model

Figure 1: Framework for the Research Study

Figure 1 above showed the theoretical framework for this research study, it implies the relationship between the three (3) sub-factors (motivation, knowledge and working skills) of KM Readiness Model that was focused in this research towards the readiness level of FPA students for internship programme.

RESULTS AND DISCUSSIONS

The questionnaires were firstly developed and constructed, and being distributed to 10 respondents as pilot study. Next, the Cronbach alpha value was computed based on the results. It was found that Cronbach-alpha value is 0.67, thus, restructure of the questionnaires items were done. Next, the adjusted questionnaires were distributed as a pilot study again to obtain new value of Cronbach-alpha. The new Cronbach-alpha value is 0.87 which means that the restructed questionnaires is much more reliable and will be used to be distributed to the sample of this study.

3.1 Demographic informations of the Respondents

The first part of the results discussed on the demographic information of the respondents. The demographic information discussed includes gender information, academic performance of the students and the parent's occupation industry as these items related with the readiness of the respondents for their industrial training program.

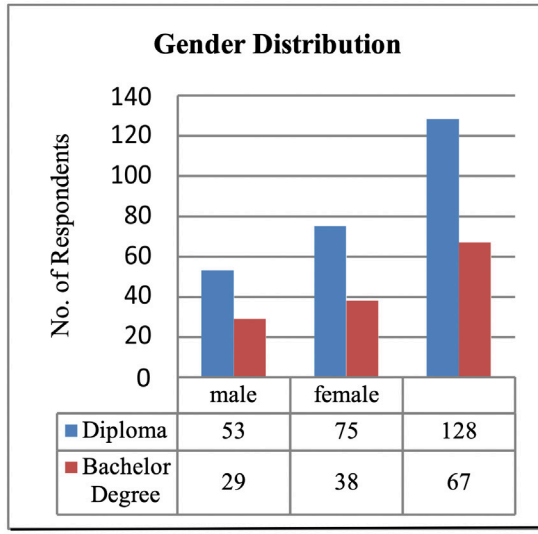


Figure 2: Gender Distribution of Respondents

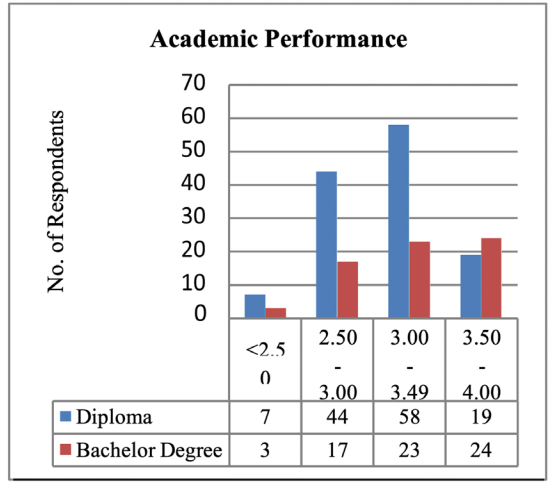


Figure 3: Academic Performance of Respondents

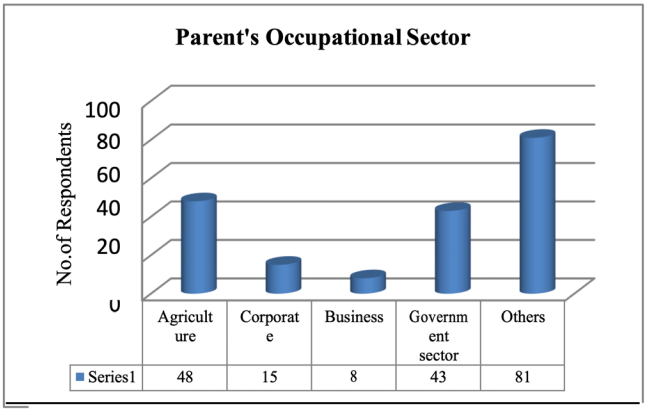


Figure 4: Parent's Occupational Sector of Respondents

Figure 2 above showed the gender distribution of the respondents from both of the programmes, AT 110 and AT220. Based on the results obtained, it was shown that the number of female respondents are slightly higher compared to male respondents. Thus, the results for the Knowledge Management (KM) readiness would reflects more on the female perspective compared to male. Meanwhile, figure 3 shows the academic performance of the respondents for both programmes. The academic performances were measured based on the CGPA (Cumulative Grade Point Average) performance of the respondents. It can concluded that for Diploma level, most of the students were having CGPA in the range of 3.00 until 3.49. On the other hand, for the Bachelor Degree programme, the academic performance is quite better since most of the students were having CGPA in the range of 3.50 until 4.00. This might be due to the higher enrollment standards that has been defined for Bachelor Degree programme. Next, figure 4 reflects the sectors of occupations for parent's respondents. It is important to discuss about the information of occupation sector for the parent's respondents since it might be related with the readiness of the respondents for their internship programme. Readiness of the students for their internship program might be affected by the sectors of their parent's occupation. Figure 4 presents the different sectors of occupation for the parents of respondents and it shows that agriculture sector is one of the top three (3) sectors included. The internship programme for Faculty of Plantation and Agrotechnology(FPA) , especially for the programme of AT110 (Diploma in Planting Industry Management) and AT220 (Bachelor

(Hons.) Technology and Plantation Management should be based on plantation/agriculture industry. Plantation industry mentioned includes any organization (public and private) that involves in the production of any agricultural products focusly,on the agricultural commodity in Malaysia, such as oil palm, rubber, paddy, cocoa, coconut, pineapple and other few future growing commodity agriculture crops. Thus, the readiness of the respondents should reflect that some of them already have their exposure in the agriculture/plantation activities starting from their parents.

3.2 Sub-factors of Knowledge Management (KM) Readiness Model

3.2.1 Motivation

According to McCord, R. (2013), the concepts of motivation is very broad consisting on 11 constructs includes of extrinsic and intrinsic motivation, identification with academics, attainment value, cost value, competence, utility value, self-efficacy, interest , expectancy , achievement, and instrumentality. Selection and shortening of the reliable and related motivation constructs has been done. Thus, the applicable and related motivational contructs has been defined for this research study which involves seven (7) constructs only which are extrinsic, intrinsic, interest, attainment value, cost, identification with academics and self efficacy.

Table 1: Motivation items of questionnaires

Constructs of motivation	Items of questionnaires	Mean	Standard Deviation
Extrinsic (M1)	*The most satisfying thing to me would be to undergo the industrial training related with my field of study.*	5.3389	0.8127
	If I can, I want to get better grades in my internship program compared with my other classmates.	5.0046	0.7925
	I want to do well in my industrial training because it is important to show my ability to my family, friends, employer or others.	5.3346	0.5723
Intrinsic (M2)	*I prefer industrial training activities that really challenges me so I can learn new thing.*	5.4477	0.5572
	I prefer doing and learning the subject that arouses my curiosity, even if it is difficult to learn.	5.500	0.8213
	The most satisfying thing for me in this industrial program is trying to follow the training working schedule.	5.4567	0.1267
	When I have the opportunity, I choose to do the activities that I can learn from even if they don't guarantee a good results.	6.1052	0.4457
Interest (M3)	*I enjoy internship program very much.*	5.7467	0.5894
	I think that industrial training program is boring.	4.0035	0.9985
	I would describe industrial training program as very interesting.	5.1025	0.7725
Attainment Value (M4)	*I would put a lot of effort into my internhip program.*	6.1825	0.4421
	I would try very hard during my internship program.	6.0124	0.3521
	It is important for me to do well in my internship program.	6.5245	0.5421
Cost (M5)	*The amount of effort it will take to do well in the internship program is worthwhile to me.*	5.0213	0.7689
	The amount of time I spend for all the activities related to internship program keeps me from doing other things I would like to do.	5.2367	0.8973
	It is important to me to get good grades in industrial training.	5.5543	0.4327
Identification With Academics (M6)	*It is important to me to learn the related important inputs for plantation/agriculture during the internship program.*	5.4325	0.3267
Self Efficacy (M7)	*I believe that I will receive an excellent grade in internship program.*	5.6702	0.8790
	I'm confident I can understand the basic concepts for all activities in internship program.	5.6743	0.9213
	I'm certain I can understand the most difficult concepts related with the internship activities.	5.5532	0.9985
	I'm confident I can do an excellent job on the assignments and activities during internship program.	6.0987	0.4321
	I expect to do well in internship program.	5.5574	0.6792

Table 1 presents the items in the questionnaires based on seven (7) constructs of motivation. Each of the constructs represented by several items of questions which will then be summarized by obtaining the average value to assess the readiness level of respondents in the motivation aspect/ component. Based on the mean value of all questionnaire items, the value obtained for motivation is at the value of 5.5254 with the standard deviation of ± 0.6437. Overally, it can be concluded that the readiness in terms of motivation component for FPA students as the respondents is within the range of agree and strongly agree based each items of questions in the questionnaires. FPA students agreed that they were having a good motivation to undergo the industrial training/ internship programme. This might be due to the eagerness of the respondents to obtain the experience in real working environment which makes them feel excited and thus, increase motivation level.

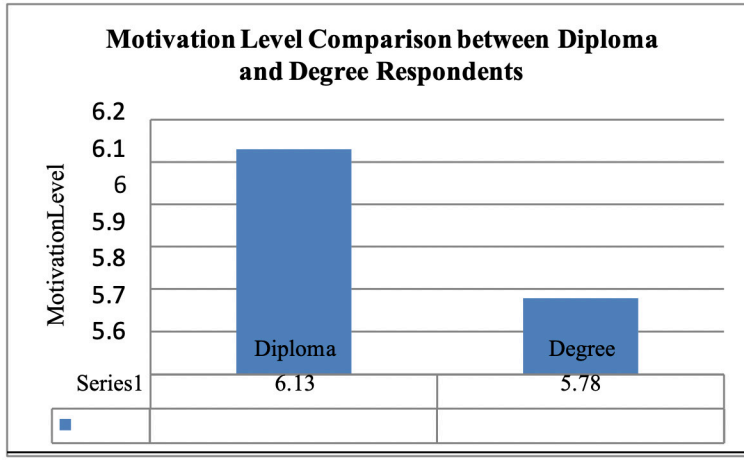


Figure 5: Motivation Level Comparison between AT110 and AT220 respondents

Notes: Scale of measurement : Likert Scale questionnaires with choice of answer.

Figure 5 reflects the comparison between motivation level of AT110 (Diploma in Planting Industry Management) and AT220 (Bachelor. (Hons.) Technology and Plantation Management). Although it can be seen there is that there is a difference in the motivation level of both programme respondents, but, the t-test analysis from SPSS software shows that it is not significant at 5% level of significance, with the p value is > 0.67. Thus, it

can be concluded that overally both of the programmes respondents were a having a good motivation to undergo the internship programme.

3.2.2 Knowledge

Knowledge consists of a body of truths that together express the truth of the world (Weinberger , 2012). There were two types of knowledge, which were procedural and declarative. Procedural knowledge is treated as know-how (skill and action knowledge) or tacit knowledge, and declarative knowledge as fact knowledge or explicit knowledge. Procedural knowledge is knowledge that cannot be easily scrutinized and is used to solve a problem rather than to describe what the problem is. Declarative knowledge is found in rule-based logic and is for describing a problem rather than providing skills for solving it (David Rooney et al, 2005). Although there were already a declaration of two different types of knowledge, this research study questionnaires for measurement of knowledge generalized the whole concept of it. The items of questionnaires within this knowledge measurement covered all the activities related with agriculture/plantation. The scale measurement for knowledge is based on multiple choice questions. Next, the questionnaires will be marked to assess the answers obtained. The calculation of the correct answers of questions would then be analysed to know the level of knowledge of the respondents as their preparation to undergo the industrial training programme. There were a total of 25 plantation/agriculture based questions included in the questionnaires.

Table 2: Scope of activities for crop cultivation

Scope of activities for crop cultivation	*Number of questions*
Seed selection	5
Lining/ / Site preparation	5
Cultural practices (maintenance process-fertilization, weeding, spraying)	5
Pests and diseases	5
Harvesting	5

Table 2 defined the scope of activities covered in the questionnaires to measure the knowledge level of respondents regarding the crops cultivation. The questionnaires cover general crops which already being covered in syllabus of courses taken by the respondents.

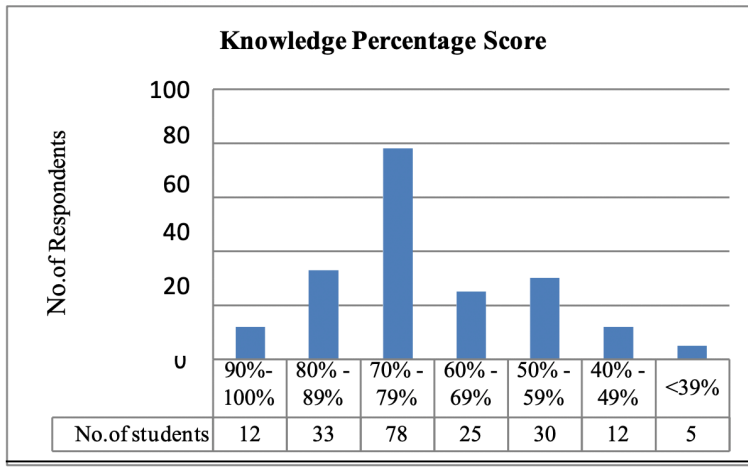


Figure 6: Knowledge Percentage Score of FPA Respondents
Notes: Scale of measurement : Multiple choice questions (The percentage score is based on the number of correct questions answered). * Significant at 5% significant level at the score of 70% - 79%.**

Figure 5 presents the summary of knowledge percentage score for the knowledge components questionnaires. It can be summarized that there is a significant difference in the knowledge score of respondents which most of the respondents score is in the range of 70% -79%. The data obtained was being analysed in SPSS software by using one-way Analysis of Variance (F-test) to assess the significant difference in the performance of knowledge percentage score for all the respondents. According to the results, it was found that there is a significant difference (where p-value is 0.035 which is less than 0.05 significant level) in the knowledge percentage score which shows that most of the respondents answer get 70-79% significantly. The results reflect that the knowledge level of FPA students is at moderate level. The reasons might be because the respondents were still in Semester 4 for both of the programmes, which might reflects the correlation of the knowledge with their semester level. It is believed that the knowledge level of FPA students would be increased as they can at least achieve 70% before graduating the programme.

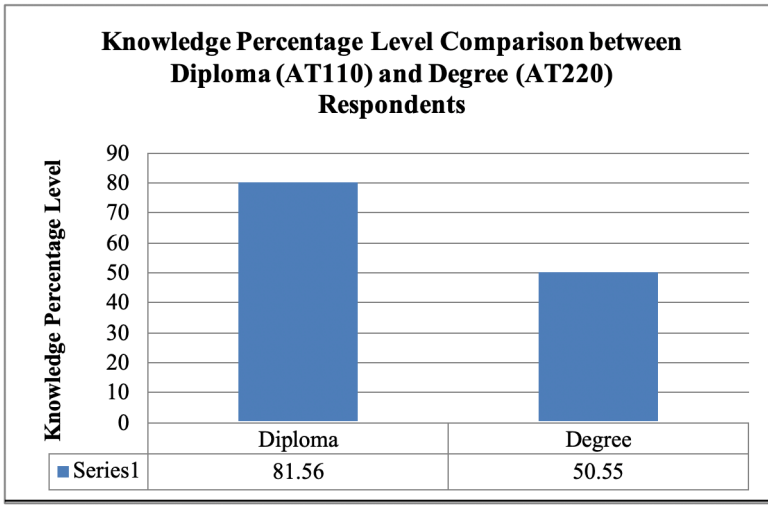


Figure 7: Knowledge Percentage Level Comparison between AT110 and AT220 Respondents
Notes: Scale of measurement : Multiple choice questions (The percentage score is based on the number of correct questions answered).
***** There is a ignificant difference at 5% significant level between the knowledge percentage level of AT110 and AT220 respondents**

Based on Figure 7, it was statistically proven through t-test at 5% level of significance that the knowledge level between the two programmes is not same. The AT220 respondents show higher knowledge level compared to AT110 respondents. This explains that, as the persons were pursuing higher learning level of programmes, thus, the knowledge in the subject matter studied also increased. The reasons might be also because of the AT220 respondents were already going through at least 3 series of internship programme. On top of that, the experience and knowledge learned helps a lot in increasing the percentage of knowledge level of AT220 respondents.

3.2.3 Skills

According to Gaëlle Pierre et al. (2014), there were three(3) broad measures of skills that were usually being assessed for a good human capital in an organization. The three skills includes cognitive skills, socio-emotional skills and job relevant skills. Cognitive skills are basically can be defined as the ability to understand complex ideas,

to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought. Literacy, numeracy, and the ability to solve abstract problems are all cognitive skills. Socio-emotional skills, sometimes referred to in the literature as non-cognitive skills or soft skills, relate to traits covering multiple domains (such as social, emotional, personality, behavioral, and attitudinal). Job-relevant skills are task-related and build on a combination of cognitive and socio-emotional skills. For this research, the skills based on the questionnaires distributed to the respondents covering three (3) different skills which are cognitive, socio-emotional skills and job-relevant skills. There were five (5) items of questions represented for each types of skills discussed.

Cognitive skills

The cognitive skills measured based on this research do not cover all the aspects of the broad concept defined. Based on the questionnaires distributed, the analysis of the items in the questionnaires were presented as in Table 3. It was found that the average value obtained by the scores of respondents based on cognitive skills is 4.6866 with the standard deviation of around ±0.5529. It reflects the results for cognitive skills from the view of respondents shows that they does not very sure of answering the questions related. Lower value of cognitive skills level also reflects there is still lack of skills based on problem-solving among the respondents from AT110 and AT220.

Table 3 : The score level of questionnaire items for cognitive skills measurement

Items of questionnaires	Mean	Standard Deviation
I am able to solve the problems arise from any situations easily	4.0131	0.9865
I would be able to think of how to learn on doing some works efficiently in a limited time given	5.5525	0.4670
I have a good solution on how to manage an agricultural farm efficiently with my own tactics of decision making	5.2243	0.5678
I intend to respond quickly on someone's quiry or questions to me.	3.0198	0.3214
I am able to make decisions based on problem-solving, although the information is not that complete.	5.6231	0.4217

Socio-emotional skills

According to Child Trends (2014), there were several broad measurements under socio- emotional skills which are self control, academic self efficacy, persistence and mastery orientation. There were also five (5) items of questionnaires representing the socio-emotional skills of the respondents for this research paper. According to the results obtained, it can be seen that most of the respondents are having a good socio-emotional skills. This is very important for all the respondents to achieve high level of socio-emotional skills because it is one of the most important skills as the graduates of plantation management industry program. The graduates later will eventually become a manager in various agricultural organizations which requires them to have a good socio-emotional skills to manage the human capital under their supervision. The average value of socio-emotional skills for the respondents is 5.6455 with the standard deviation of ± 0.4675 which reflects the average of a good skills of the respondents. The results for the questionnaire items in socio-emotional skills measurement were as in Table 4 below.

Table 4: The score level of questionnaire items for socio-emotional skills measurement

Items of questionnaires	Mean	Standard Deviation
I can be easily calm down although when I get upset during the working time.	5.7894	0.3567
I would again and again try to solve problems until it is completely solved.	5.1245	0.5692
I like to undergo undergo internhip programme because I know it is very interesting.	5.7432	0.2134
I would work harder in anything I do if to make sure of a good outcomes.	5.8972	0.5462
I am able to learn all the process and activities contained in the internship programme.	5.6732	0.6521

Job- Relevent Skills

Basically, in order to have some preparations before

undergo an internship programme, the students should have a set of basic job-relevant skills such as analytical skills, communication skills, computer skills, inter-personal skills, problem-solving skills, teamwork skills and many more. There were also five (5) related items of questions used in order to measure the job- relevant skills of the respondents and it can be seen that the average value obtained representing job-relevant skills is 4.8481 with the standard deviation of ±0.64696. Thus,it represents that the respondents is realized that they are having insuffiecient jo-relevant skills yet because their answer were in the range of unsure and agree with the statement mentioned.

Items of questionnaires	Mean	Standard Deviation
My communication skills in English and Bahasa Malaysia is very good.	3.5567	0.9941
I am very glad to become a leader in doing a group work.	5.5432	0.3479
My computer skills is very satisfying especially in all the softwares for working requirements.	4.5673	0.7864
I can make a good analysis based on derivation from any problems arise.	5.5748	0.4355
I am very competent in managing the farm and agricultural operations as it everything is under controlled.	4.9984	0.6709

Table 5: The score level of questionnaire items for job-relevant skills measurement

CONCLUSION

As a conclusion, the readiness of FPA students were measured and it can be analysed that the students were moderately ready for their internship programme based on the three-subfactors of Knowledge Management Readiness approach. Thus, based on each factors, it can be identified that the respondents from two programmes AT110 and AT220 FPA were lacking in two sub-factors of KM readiness management, which are knowledge and working skills. Specifically, it can be concluded that the motivation level for both of the programme level was very good showing that the respondents are very motivated to undergo industrial training. But, the knowledge level as a whole, just show moderately value with the score of mostly between 70-79% knowledge level percentage score. Meanwhile, the skills determinants, especially in cognitive skills and job revelant skills is just at moderate level. Thus, it would be recommended that the committe members of any organizations/ clubs within the faculty to develop some programmes that can enhance the knowledge and skills of the students before they undergo industrial training.

ACKNOWLEDGEMENTS

Thanks to all members of Faculty Plantation and Agrotechnology , especially the students that became the respondents of this research study. And also, thanks to the all the peer lecturers for their support along through the process of this survey. This research is one of the requirements for ARAS grant 2016-2018 under the title of " Student's Readiness for Industrial Training in FPA".

REFERENCES

Azmi, A.N. (2019) Effects Of Industrial Training Programmes On Competencies Of Engineering Graduates: A Preliminary Study. https://www.researchgate.net/publication/335174832

Bukaliya, R. (2012). The Potential Benefits And Challenges Of Internship Programmes In An Odl Institution: A

Case For The Zimbabwe Open University. IInternational Journal on New Trends in Education and Their Implications January, February, March 2012 Volume: 3 Issue: 1 Article: 13 ISSN 1309-6249nternational ISSN 1804-171X (Print), ISSN 1804-1728 (On-line), DOI: 10.7441/joc.2016.04.01

Jana, M. (2016). Measuring Knowledge. Journal of Competitiveness Vol. 8, Issue 4, pp. 5 - 29, December 2016

Kamaruddin, K. and Mohd Noor, N.L. (2017). From E-Government to T-Government: A Malaysian Citizens' Readiness Study. https://www.researchgate.net/publication/320370664.

Lim, H. E., & Mustafa, M. M. (2013). Effectiveness of Industrial Training in Improving Student's Generic Skills.

International Journal of Business and Society. Vol.14 No.3, 2013 368-375

Luckey, A.N. (2012). Assessing Youth Perceptions And Knowledge Of Agriculture: Office Of Graduate Studies Of Texas A&M University

McCord, R. and Matusovich, H.M. (2013). Developing an instrument to measure motivation, learning strategies and conceptual change 120th ASEE Annual Conference & Exposition, Atlanta, GA.

McCord, R. and Tech V. (2013). Developing an Instrument to Measure Motivation, Learning Strategies and Conceptual Change. American Society for Engineering Education, 2013.

Neumann , F., (2015Analyzing and Modeling Interdisciplinary Product Development, DOI 10.1007/978-3-658- 11092-5_3, © Springer Fachmedien Wiesbaden.

Pierre, G. et al. (2014). STEP Skills Measurement Surveys Innovative Tools for Assessing Skills. The World Bank: Human Development Network.

Pour, F.B. et al. (2013). A Review and Comparison on KM Readiness Models. Applied Mathematics in Engineering, Management and Technology 1 (1)2013: 25-30.

Rooney, D. (2005). Handbook on theKnowledgeEconomy Edward Elgar Publishing, Inc.136 West Street

Roy, P. (2018). International Journal of Innovative Knowledge: publication at: https://www.researchgate.net/publication/334732910

Taghavi, N. et al. (2013). Developing a Model to Assess the Readiness of Implementing Knowledge Management: Evidence from Yazd Regional Electric Company. International Journal of Academic Research in Business and Social Sciences November 2013, Vol. 3, No. 11 ISSN: 2222-6990.

Watanabe, R.M. and Seno, D. (2009). Shaping Knowledge Management: Organization And National Culture. Journal Of Knowledge Management J Vol. 14 No. 2 2010, Pp. 214-227, Q Emerald Group Publishing Limited, Issn 1367-3270

CDIO Initiative in Basic Sciences Courses in Diploma Chemical Engineering

Sarifah Fauziah Syed Draman, Noraini Razali

Faculty of Chemical Engineering, Universiti Teknologi MARA, Terengganu Branch, Campus Bukit Besi, 23200 Bukit Besi, Terengganu, Malaysia sfauziah@uitm.edu.my
**Corresponding Author*

Abstract: This paper shares the experience of the Diploma in Chemical Engineering (EH110) of UiTM Bukit Besi Campus in using basic science cources to achieve the CDIO (Conceive – Design -Implement - Operate) goal of value-added engineering systems. In particular, it focuses on the Semester 1 course CHE 142 (Inorganic and Physical Chemistry) and semester 2 course CHE 143 (Organic and Analytical Chemistry). This course offers students understandings of concepts in chemistry while retaining the exciting aspects of chemistry so as to develop interest in the study of chemistry as a discipline. Topics covered are atomic stuructures, chemical bonding, acids and bases, redox reaction, chemical thermodynamics, chemical equilibrium and chemical kinetics. Meanwhie, in CHE 143 course, students learn to recognize and name organic functional groups. Students learn about systems to represent organic molecules, how structure affects physical properties, drawing resonance forms with proper arrow convention, organic acid-base reactions, substitution and elimination reactions and organic syntheses. Students also learn how to perform analytical techniques such as spectroscopy gas chromatography and learn how to interpret the resultant spectra and chromatograms. In this paper, experiences about teaching and learning activities have been addressed including assessment process of the courses taught in last 3 years.

Keywords: *CDIO skills, Chemistry, Engineering, Standard, Sciences,*

INTRODUCTION

A CDIO program is based on the principle that product, process, and system lifecycle development and deployment are the appropriate context for engineering education (Peter, 2012). The CDIO initiative was introduced to the UiTM's engineering faculty by Singapore Polytechnic in year 2012. The CDIO Initiative offers an education stressing engineering fundamentals, set in the context of the Conceiving — Designing — Implementing — Operating process, which engineers use to create systems and products. CDIO Syllabus states the outcomes of the CDIO curriculum which focuses on 4 areas of skill sets:

1. Technical Knowledge and Reasoning
2. Personal and Professional Skills and Attributes
3. Interpersonal Skills : teamwork and communication
4. Concieving, Designing, Implementing and Operating System in the Enterprise and Societal Context.

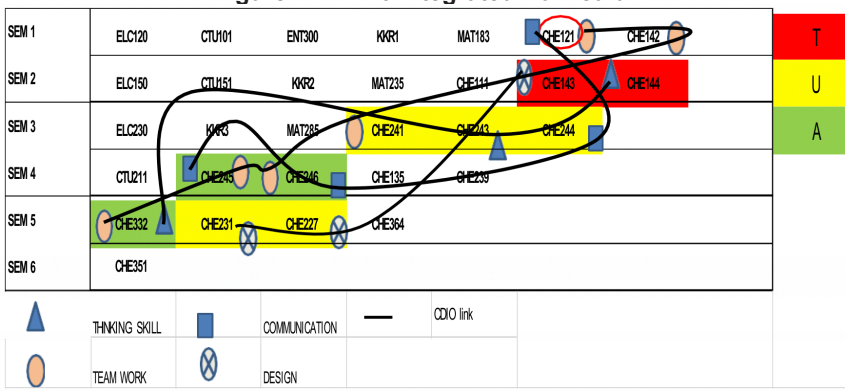
The goal from the initiative are to educate students who are able to master a deeper working knowledge of the technical fundamentals, lead in the creation and operation of new products, processes and systems, understand the importance and strategic impact of research and technological development on society and to attract and retain students in Engineering (Siegfried & Gabrielle, 2012 ; Anderews et al. 2011) Faculty of Chemical Engineering has been decided to join the CDIO initiative in the diploma curriculum level which applied of active and experiential learning, lab work, case study and project-based learning. All the skills of CDIO were integrated from semester 1 course code until semester 6 (final year) course code. Table 1 and Figure 1 show the integrated curriculum for diploma level of Chemical Engineering in UiTM.

Table 1 and Figure 1 illustrating the teaching and learning process has been structured based on CDIO syllabus. It means that CDIO skills relates through learning activities. TUA can be read as Teach Utilize/Use Assess. Teach means teaching skills and related concepts to the students. Utillize means let the students use the knowledge and archieved skills. Meanwhile, Assess means always assessing every used skills (Batdorj et al. 2018).

Table 1. Integrated curriculum in Diploma Chemical Engineering

Part	Course Code	Level	CDIO Skill
1	CHE 121	Teach	Communication, Teamwork
2	CHE 142	Utilize	Teamwork
	CHE 143	Teach	Design
	CHE 144	Teach	Thinking Skill
3	CHE 241	Utilize	Teamwork
	CHE 243	Utilize	Thinking Skill
	CHE 244	Utilize	Communication
4	CHE245	Assess	Communication, Teamwork
	CHE246	Assess	
5	CHE332	Assess	Teamwork
	CHE231	Utilize	Design
	CHE227	Utilize	Design

Figure 1. EH110 Integrated Curriculum



In order to addressed the CDIO spirit, two basic sciences courses are chosen to be discussed for student's learning experience.

2.1 Inorganic and Physical Chemistry Course able to :

There are three learning outcomes for this course . Upon completion of this course, students should be

1. Describe the basic principle of inorganic and physical chemistry.
2. Apply the basic principle of inorganic and physical chemistry.
3. Evaluate the inorganic and physical chemistry concept towards chemical engineering related problem.

In this course, a few activities are given to the students in order to utilize CDIO skills on teamwork. Table 2 show example scenarios for the CDIO initiative activities. All the activities emphasize on active and experiential learning methods. Menawhile. Figure 2 shows examples of students' activities that submitted for assessment. Even though the task is simple, the given task can make the students realize that it is not enough to know the theory when it comes to solve and construct real thing (Audunssson and Manolescu, 2014).

Table 2. Example of activities in Inorganic and Physical Chemistry Course

Activity	Scenario	Objectives
1 Video on Electrolysis	You have just joined as a Process Engineer in Electroplating Sdn. Bhd. which provides quality plating and metal finishing on customer own parts for the local electrical, electronics, computer, telecommunication, optical, automotive and hardware industries. You and your team are asked by Engineering Operation Manager to make a creative video that explain clearly the basic principle of electrolysis process. This video will be presented to a group of students from UiTM that will come to visit your company. The students request to know in details about electroplating process	This activity requires you and your team to make a creative video that explain clearly about electrolysis process, factors that influence the products of electrolysis, half and overall reaction and product formed from the electroplating process. The video should include (but not limited to) the following: i. The background of the company ii. Introduction of electrolysis iii. Factors that influence the products of electrolysis iv. Explain on the process of electroplating process
2 Lab Work- Heat of Neutralization	You are working as a Product Engineer in Berjaya Sdn. Bhd. which produces Alk X. Alk X is a strong base material that used to neutralize accidentally acids spill through acid-base neutralization reaction. Reactions Alk X with acids will generate some heat. As a product engineer, you and your team are asked to construct a simple coffee cup calorimeter and measure the heat changes accompanying neutralization for weak and strong acids with Alk X	This activity requires your team to construct the calorimeter, determine heat capacity of a calorimeter and measure the heat changes accompanying neutralization for weak and strong acids with base. Upon completion of the experiment, write technical report about your team's finding
3 e-book on catalysis	You have just joined as a Process Engineer in Cal Tech Sdn. Bhd. which provides quality catalytic converter for the local automotive industries. You and your team are asked by Engineering Operation Manager to make a creative e-book that explains clearly the catalysis concept. This e-book will be presented to a group of students from UiTM that will come to visit your company. The students request to know in details about catalysis	This activity requires you and your team to make a creative e-book that explain clearly about catalysis. The e-book should include (but not limited to) the following: i. The background of the company ii. Introduction of catalysis iii. Effect of catalyst on reaction iv. Explain on the various type of catalyst and its application.

Figure 2. Examples of students' submitted activities

2.2 Organic and Analytical Chemistry Course

Upon completion of this course, the students should be capable to archieve the following course learning outcomes:

1. Apply common nomenclature system of various organic compounds structure
2. Evaluate chemical reaction mechanisms of organic compounds upon their functional group and properties

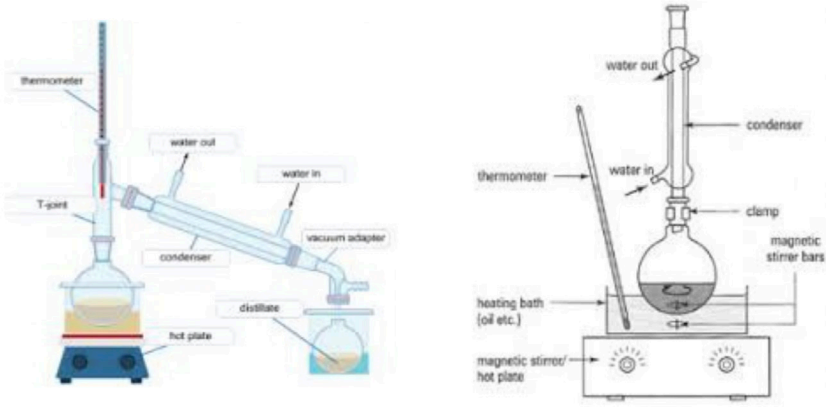
3. Analyze experimental data from an instrumental quantitative analysis

As stated in Figure 1, this course introduce and teach design skill. Therefore, there is activity has been proposed towards archieving the skill. Table 3 show an example of the activity. This kind of activity is considered as active learning which involved student interacting with course content more actively than they would in a typical educational lecture (Houseknecht, et al. 2019)

Activity	Scenario	Objectives
Lab Work - Formation of an Ester	You have just joined as a Process Engineer in Chempharm Sdn. Bhd. Your company has just received a amount of an acid and alcohol to erform an organic synthesis. As a process engineer you and your team are asked to determine the percent yield of produced ester.	This activity requires you and your team to perform an organic synthesis based on the provided chemicals. You and your team need to propose appropriate method/procedure to produce an ester based on the given chemicals and apparatus. Chemicals ethanol and ethanoic acid Apparatus Hot plate, ring stand, heating mantle, round bottom flask/distillation flask, support clamp, 20 mL pipette, magnetic stir bar, Keck clamp, connecting adapter, distillation adapter, Liebig condenser, receiving adapter, thermometer adapter, laboratory thermometer, receiving flask, in/out water hoses (Note: heating mantle with both stirrer and heater can be the optional apparatus)

Table 3. Example of activity in Organic and Analytical Chemistry Course

Since, this course at level teach of CDIO skill, the task given more to guided task. There are two set up experiment that has been proposed by students (Figure 3 (a) or Figure 3(b)). Different set up for the same objectives. The utilize level for CDIO skill in design is developed in Product Design and Development course (CHE 227) (Draman et al. 2018).



(a) (b)

Figure 3. Example of proposed set up experiment by students

2.3 Assessment Process

There are two types of assessments which is direct assessment method and indirect assessment method (Batdorj et al. 2018). Direct assesment methods include test, final exam, laboratory work and assignment. Example of indirect assessment methods are exit survey, meeting and discussion. Figure 4 show both direct and indirect assessment methods that must be used for evaluation a program. The evaluation results are capable to improve performance of certain course's course learning outcome including these two basic siences courses in EH110 programme. Furthermore, in order to have better reflect the nature of work carried out by students, it is important that they are assessed based on different criteria relevant to the nature of the task/project (Vo et al. 2017).

CDIO intiative activities that carried out is align with the implementation of outcome based education (OBE) and student centred learning (SCL) curriculum that adopt since 2010. Thus, directly obey to the guideline in the Code Of Practice For Programme Accreditation (COPPA) and Programme Standard. Previuosly, the recognition for Programme Accreditation by Malaysian Qualification Agency (MQA) and now towards accreditate by the Engineering Technology Accreditation Council (ETAC) which is a delegated body by the Board of Engineers Malaysia.

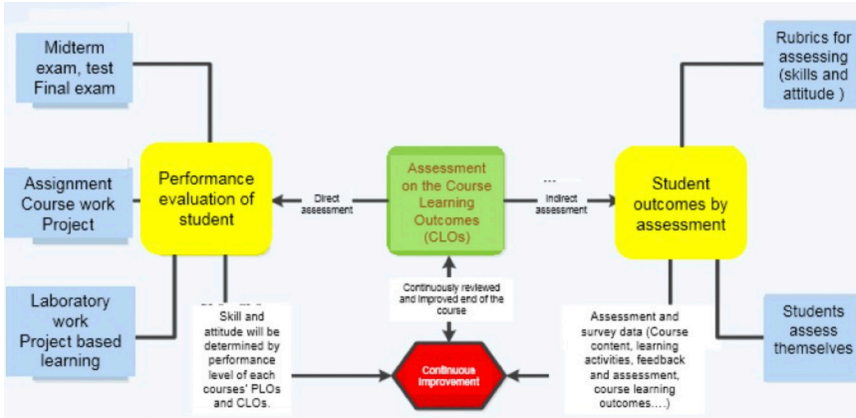


Figure 4 Assessment Process Source : Batdorj et al. 2018

CONCLUSION

The learning method through students own initiative and technology/internet based make their learning process interesting and their understanding on the topic given better. From the activity prepared, students actively participate in the learning process. They are engaged and practice the communication skill, teamwork and collaborative learning. The communication between lecturer and students become active in getting the knowledge to produce the video and other activities outcome. The students were exposed to the position of work available in the working life and working life experience. The impact from the CDIO initiative from basic sciences courses can provide an opportunity for the students to do some introductory engineering for enriching their learning experience.

ACKNOWLEDGEMENTS

Authors would like to express our gratitude to Universiti Teknologi MARA for providing the facilities, technical and financial support given throughout the research work by ARAS Grant (600-IRM/DANA 5/3/ARAS (0136/2016).

REFERENCES

Vo, N-V, Nguyen, D-M. & Ha, N-H. (2017), A Case Study of CDIO Implementation in the Course of Hacking Exposed at Duty Tan University. Proceedings of the 13th International CDIO Conference, Canada

Peter, G., (2012), CDIO Introductory Workshop Programme Handbook, Materials To Supplement Slides Malaysia.

Siegfried, R. & Gabrielle, L. (2012) Resistance To Change In Institutionalizing The CDIO Standards: From A Cascade To An Agile Improvement Model, Proceedings Of The 8th International CDIO Conference, Queensland University Of Technology, Brisbane.

Andrews, J., Robin C., Gareth T., Chris E. (2011). Reviewing and Evaluatin CDIO [Conceive, Design, Implement, Operate]: An Empirical Approach To Engineering Education Curriculum Development, Problem Based Learning Annual Conference.

Batdorj, T., Purevsuren, N. & Gonchigsumla, K. (2018). Experience of Developing Student's CDIO Skills using Design Built Projects. Proceedings Of The 14th International CDIO Conference, Kanazawa, Japan.

Audunsson, H. & Manolescu, A. CDIO Spirit in Introductory Physics Cources in Engineering. Proceedings Of The 10th International CDIO Conference, Barcelona, Spain.

Houseknecht, J. & Leontyev, A. . Maloney, V. & Welder, C. (2019). Introduction to Active Learning in Organic Chemistry and Essential Terms. 10.1021/bk-2019-1336.ch001.

Draman, S.F.D., Mohd, N., Yasim, M.Y. & Anuar, N. (2018). Integrated CDIO Initiative and Design Thinking in Product Design and Development Course : A Case Study in Diploma of Chemical Engineering. Proceeding of 2nd Multidisciplinary Views on Sustainable Living and Built Environment : Sus-Lab 2. pg 370-377